PART IV.

TEACHERS' MANUAL

FOR

THE PRANG ELEMENTARY COURSE

IN

ART INSTRUCTION

SIXTH YEAR

BOOKS VII AND VIII.

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TEACHER'S MANUAL

PART IV

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THE PRANG ELEMENTARY COURSE

IN

ART INSTRUCTION

BOOKS 7 AND 8

SIXTH YEAR

11652

BY

JOHN S. CLARK, MARY DANA HICKS
WALTER S. PERRY

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AUTHORS' PREFACE.

No person can be oblivious to the great educational development of the past few years. The introduction of the kindergarten, of manual training, of nature study, of drawing, of modeling, and of color work into the schools have all led the way to a broader and fuller recognition of the subject of art as an essentially important feature of public education both for the proper development of the individual child and also as a preparation for practical social life.

Art for Social Well-being.

The psychological developments of the past few years, whether psychology be regarded from the old metaphysical, or faculty, standpoint, or from the newer standpoint of physiological investigation, also establish the supreme importance of art as the expression of individual creative activity in the training of youth for social well-being.

Art as a Subject of Public Instruction.

In the opinion of the authors of this Course the time has therefore come when the subject of art as a definite, fundamental feature of public instruction should be clearly recognized; and this Course is a serious attempt to formulate for the schools a system of art instruction upon a distinctly psychological and educational basis. The instruction starts with the assumption that all art work is in its nature the product of creative self-activity, using the study of nature and of art for certain definite, conscious ends, and that drawing, modeling, and work with color are but the means by which this activity is manifested. Accordingly, in this series there are presented principles and methods of instruction radically different from any that have been presented heretofore, and embodied

in an entirely new set of exercises. And the authors fully believe that the time is ripe for such a system of art instruction as is here presented.

Artists and Art Teachers.

There are now a goodly number of trained art teachers directing the work in the schools, who not only fully understand the technicalities of art, but who are also acquainted with its psychological and educational aspects. And then, most significant of all, the series includes contributions from some of our most eminent American artists: —

John La Farge,
Abbott Thayer,
Edwin H. Blashfield,
Winslow Homer,
Frederick S. Church,
Ross Turner,
Arthur W. Dow,
Herbert Adams.

A Distinctive Course.

The authors of this system do not feel it necessary to dwell upon the distinctive features which make this Course an essentially new one for our public schools. A mere glance at the illustrations and the nature of the exercises shows how essentially different in aim and method this system is from any which has preceded it. In the preparation of this Course the authors have received assistance from very many persons, and they take a special pleasure in acknowledging the valuable assistance they have received from the leading supervisors and teachers of art instruction in the country.

The authors desire to acknowledge the very great assistance received from Mrs. Edith Clark Chadwick, in the preparation of the illustrations.

Valuable Counsel.

The authors also desire to acknowledge their obligations for valuable counsel to Mrs. Hannah J. Carter, The Prang Normal Art Classes; Mrs. M. E. Riley, Supervisor of Drawing, St. Louis, Mo.; Mr. James Frederick Hopkins, Art Director, Boston, Mass.; Miss Josephine C. Locke, Supervisor of Drawing, Chicago, Ill.; Prof. W. S. Goodnough, Supervisor of Drawing, Brooklyn, N. Y.; Miss Katherine E. Shattuck, Normal Class,

Art Department, Pratt Institute, Brooklyn, N. Y.; Miss Sara A. Fawcett, Supervisor of Drawing, Newark, N. J.; Miss Elisa A. Sargent, Supervisor of Drawing, Wilkesbarre, Pa.; Miss Augusta L. Balch, Supervisor of Drawing, Salem, Mass.; Miss Helen Fraser, Supervisor of Drawing, Columbus, O.; Miss Myra Jones, Supervisor of Drawing, Detroit, Mich.; Miss Stella Skinner, Supervisor of Drawing, New Haven, Conn.; Miss Mabel S. Emery, Boston, Mass.; Mrs. Lucy Fitch Perkins, Chicago, Ill.; Miss Edith Palmer, Director of Art, Tome Institute, Port Deposit, Md.; Mr. Alfred V. Churchill, Director of Art, Teachers' College, New York; Miss Eliza B. Richardson, Mrs. Alice Brannan Haley, The Prang Normal Art Classes; Miss Wilhelmina Seegmiller, Supervisor of Drawing, Indianapolis, Ind.; Miss Ruth Warner, Art Instructor, Teachers' Training Classes, Brooklyn, N. Y.; Miss Bonnie Snow, Supervisor of Drawing, Minneapolis, Minn.; Miss Harriette L. Rice, Supervisor of Drawing, Providence, R. I.; Miss Mary W. Gilbert, Supervisor of Drawing, New Bedford, Mass.; Miss Ida E. Boyd, Primary Supervisor of Drawing, Brooklyn, N. Y.; Mrs. Lucy Booth, Boston, Mass.; Mrs. Franc Elliott, Supervisor of Drawing, Salt Lake City, Utah; Miss Mary E. Garretson, Supervisor of Drawing, Allegheny, Pa.; Miss Estelle E. Potter, Supervisor of Drawing, New London, Conn.; Miss Ruth Gould, Chicago, Ill.

JOHN S. CLARK,
MARY DANA HICKS,
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INTRODUCTION.

ART AND ART EDUCATION.

The Prang Elementary Course of Art Instruction assumes that Art properly understood is not an imitative copy of nature, but a new creative use of nature's materials for human purposes. The primitive industrial arts — building, weaving, pottery-making, and the like — stood, not for the mere reflection or multiplication of already existing natural objects, but for human *ideas* (at first very dim) about the needs of life and about ways of meeting those needs. The great constructive, industrial arts of to-day, which have grown out of these rude, primitive arts, rise from the same source, a source within human nature; and that source is what is called creative imagination.

But the human race has other needs than those for shelter, food, and clothing to the satisfaction of which the industrial or "useful" arts are chiefly directed. Men have not alone bodies to be cared for, but also hearts, minds, and souls crying out for nourishment, for exercise, for growth. Feelings of love, admiration, and awe are as "natural" as feelings of cold and hunger, only they have to do with a higher phase of human nature than that which pertains to the body. They are that for which the body exists. Man instinctively tries to express his best self in a way to appeal to others; and thus the so-called "Fine Arts" have come into existence, including painting, sculpture, and architecture, all interrelated in practical affairs and all related so closely to the industrial or "useful" arts that the dividing line between them is more theoretic than real. The source of the Fine Arts, therefore, is within our human nature. It is the creative imagination, directed by the heart, mind, and soul, which here uses nature's facts in its own way.

This is, in brief, the general idea of art which the authors aim to embody in The Prang Elementary Course of Art Instruction. It is by no means desired that philosophic theories of art be imposed upon children. If teachers grasp the underlying idea, they will naturally use more consistent and practical methods of class-work than are sometimes followed in a haphazard way, in the absence of any real understanding of what art is.

With this idea of art and its place in the world, as a basis in the teacher's mind, it will be apparent that elementary art instruction should aim to develop the best mental powers of each individual child. The growth of the children's creative imagination along healthy lines, accompanied by growth in manual skill as the result of actual practice in doing things, is the main purpose of the whole course. To this end the child is led to make and classify in his mind observations of form and color in nature, and observations of form and color as used by master-workers in already existing art creations. These two correlated lines of observation — together with the exercise of personal, creative activity — are of the greatest educational importance. The helpful influence of studying good art examples cannot be overestimated, quickening as they do the child's artistic sense, inspiring him with fresh interest and leading him to work toward higher ideals than those which he would perceive unaided.

For instance, **in connection with the study of Nature** for her material facts and her spiritual meanings, the pupil studies fine artistic renderings of nature, — plant life, animal life, and landscape, where beauty of space arrangement is well considered, — leading up to studies of fine landscape motives in the best decorative composition, and to the creative utilization of landscape motives in original compositions.

In connection with the study of Industrial Construction pupils are led to consider not only fitness of form to material and to purpose, but also beauty of form and proportion and of space relations. Examples of constructive drawing where all these elements have been carefully considered are presented for study in the various grades, giving a wide variety of subjects, and in the higher grades broadening into the study of examples of architectural masterpieces.

In connection with the study of Historic Ornament and Decorative Design the pupil also studies space relations, both through observation of examples and through original, creative work, learning to see in the characteristic ornaments of different nations and different ages not simply a record of environments and race histories, but also and above all a showing of the manifold ways in which people have tried to express their own ideals of beauty and harmony in form and color and in space relations.

Pose Drawing, begun in the lowest grades and there incidentally utilized as a means of illustrating stories of human character and action, is strengthened in every grade by the presentation of artists' drawings from the pose; and, as the study of beauty in space relations gradually shows its bearing upon pose drawing, the examples given from great artists like Thayer, Sargent, Blashfield, and La Farge lead

pupils' power of appreciation up toward the supreme artistic utilization of the human figure in the greatest decorative art, where man's own image is used to show forth the finest feelings, the most exquisite fancies, and the greatest thoughts of the masters.

To reach these ends necessarily implies careful training for the pupil. Drawing is not "natural" to children in the same sense in which speaking, walking, and eating are natural. Counting out the rare artistic geniuses that appear not once or twice in a whole generation of children, it must always remain true that good drawing cannot be secured merely by giving children opportunity for the expression of their present selves, but by sympathetic, intelligent, conscientious training, leading them toward still higher stages of appreciation and of creative power.

Yet the development of personal skill in drawing is only a part of the purpose of the Course. The cultivation of readiness in the use of drawing in connection with other studies is also a part of the purpose. These are means toward an end. The end is twofold; it includes the development of individual, creative power according to the measure of each child's natural endowment, and it includes the development of individual, appreciative power, each child rising gradually from the point where he enjoys only the sort of thing which he can do for himself, up to a point where he is able to enter in some measure into the thought and feeling of really great artists.

What is needed for Art Training.

In preparing material for such art training, the needs of the supervisor or director of the teachers and children must be carefully considered. The drawing-book with fine examples of painting, sculpture, and architecture from masters on illustrative pages and with special examples on the drawing pages is needed. Such a drawing-book gives inspiration and instruction to teachers and children by examples of good composition and rendering, of historic ornament, and of conventions of industrial drawing, and also by providing that sequence of work which is so essential for all true progress.

The supervisor or director may direct and personally inspire the teachers through meetings, classes, visits, and courses of study, but even with drawing-books these cannot suffice for the needs of the teachers in the absence of the supervisor. Therefore, manuals are provided which enable the supervisor or director to put into the hands of the teachers the general plan, principles, and methods of Art Instruction for reference and for study.

In addition to drawing-books and manuals, the teachers should be supplied with material which will serve to educate and elevate the pupils — objects of nature and of art which will help in the formation of ideals. Growing plants in the windows of the schoolroom will do much to bring the child to a love and appreciation of nature.

Types of form — the type models, and types of color as found in the color unit, are needed as standards by which to classify and to appreciate general form and color. Beautiful objects of art as subjects for study and for drawing aid very much in the cultivation of taste. A collection of fine pottery forms is a valuable adjunct in Art Instruction.

And finally, examples of the great art conceptions of the world, simply framed and hung upon the walls of the schoolroom, will create an atmosphere of fine thought and feeling conducive to that appreciation and production of the beautiful by each individual pupil for which Art Instruction aims.

THE SUBJECT DIVISIONS OF ART INSTRUCTION.

There are three distinct yet correlated subjects in Art Instruction which call for careful consideration : —

REPRESENTATION, the science and art of delineating or representing objects as they appear to the eye.

DECORATION, the science and art of producing beauty in ornament.

CONSTRUCTION, the science and art of making diagrams or working-drawings, which give the facts of objects, and from which objects may be constructed.

Every course of drawing should give well-balanced and closely connected instruction in the three subjects, — Representation, Decoration, Construction, — should lead to the appreciation of beautiful form in each of the three subjects, and should provide suitable examples of "rendering" as well as of historic ornament.

Care should be taken to have the nature of these three subjects clearly developed in the minds of the pupils; and frequent opportunity should be taken to recall and impress them. Instruction in the three subjects should be as nearly parallel as possible; it would be found a great disadvantage to pursue one of them for six months at a time to the exclusion of the other two.

Composition is essential in all these subjects. It includes selection, arrangement, proportion, space relations. Thus there is composition in pictures — composition in ornament — composition in constructive design. Composition in art, as in literature and in music, may be studied in the work of artists, but it can be produced only by the individual, as it of necessity implies original work.

Representation; or, Drawing as Applied in Representing the Appearance of Objects.

Representation not only deals with the truth of appearance: it also requires the making of a picture by composition as well as by drawing. The art principles of selection and arrangement can be applied in elementary composition by the pupils, not only in the selection and grouping of objects to make a picture, but also in selection and arrangement in landscape. Here space relation and line direction play important parts. It must be remembered that composition appeals directly to the creative faculty.

What a Picture is. — A true picture not only shows how an object or a group of objects appears, but it also tells something of the one who has drawn the picture. It tells how the object looked to him; it tells not only what he saw, but also what he thought about the objects. For whoever draws a picture indicates, or tries to indicate, in the drawing what parts he cared for most. He also endeavors to show his ideas of beautiful composition. This human element, added to the true presentation of the appearance of objects, makes the real picture.

Now a picture may be in outline, in light and dark, in light and shade, or in color. The study and drawing of the appearance of simple models and objects for the mere outline is valuable in order to attain a realization of the true appearance in different positions. Along with this, there should be a study of the best methods of expressing the relative importance of objects, of showing the greatest beauty of contour and of light and shade, and of giving feeling to the work by drawing; also of suggesting color through light and dark by "pencil-painting" or by ink and the brush, or by painting with color.

Pictorial Composition.

Its Purpose. — One of the most important elements in Representation is that of composition. This element enters into all Representation, whether of single objects or a group of objects. Its purpose is to create a subtle arrangement or synthesis of lines, of forms, of colors, which shall present a beautiful whole. The final

test of composition must be its effect in producing a beautiful impression as a whole — an impression attained only through that interrelation and subordination of parts which make oneness — unity. Ruskin defines composition as "the help of everything in the picture by everything else." The first step toward composition is selection, looking toward harmony. The objects selected for a group may be beautiful in themselves, and yet, if their relation to each other, if their mutual "help" is not considered, if, in other words, they are not "composed," the effect as a whole will not be beautiful.

Selection of Objects. — It is well to remember that even in its beginnings this work should be pictorial art. For this purpose, select objects which are beautiful in form and pleasing in association. The many pleasant associations that we have with objects which are constant companions form a good basis for direct study.

The selection of natural objects must be made with equal care. It is frequently said that "Nature never makes a mistake." The inference made by some from this statement is that all natural objects are beautiful. A moment's reflection will show that this is not true. In selecting natural objects, of any definite kind, for Form Study and Drawing, the guiding thought should be to choose characteristic and beautiful examples.

A Group. — In making a group, determine first the idea to be expressed, thus leading to the selection of objects having harmonious relations. The idea of the group, then, controls the selection of the objects — here again appears the maxim, as true in art as in education, the whole before the parts. If the idea is to express the beauty of fruit, let the group be wholly of fruit. If the idea is to express the beauty of vegetables, — fruits of the earth, — let the group be wholly of vegetables. A variety of things having no apparent connection with one another gives no pleasure in a picture, and distracts rather than composes. For instance, a group of delicate fruit with rougher vegetables seems inharmonious. They have not enough in common, either in the purpose which they serve or in their general appearance. The arrangement is incongruous. Only the most hardy fruit should be grouped with vegetables.

The Arrangement of a Group. — If a picture of a group is desired, it will not, then, be satisfactory to place the objects at random and draw them. Some thought must be given to the arrangement; for, if arranged in one way, the group may be very pleasing, while if arranged differently, the group may not be at all pleasing. If such arrangements are considered thoughtfully, it will be found that, in the one case, the simple principles of elementary composition have been regarded, and in the other they have been disregarded. It will be found, moreover, that these principles of composition are so simple and natural that children may be led to discover them. In studying the arrangement of a group, consider: —

1. The place of the principal object.
2. The place of the secondary objects.
3. The figure made by the group on the ground or table.
4. Partial view of some of the objects.
5. Upper line of the group.
6. **Variety** in the positions of the axes and in the faces visible.
7. **Repose** of the objects.
8. **Unity** of the group — distance between objects.

(1) Choose the principal object, and, generally, place it centrally but not exactly in the centre; (2) do not place the other objects in a straight line with the principal object; (3) try the effect of placing the objects so that if the centres of their bases were connected an irregular figure would be made; (4) place them as if they were good friends and belonged together, and (5) so that they will appear at rest. But remember (6) that the objects should not have the same positions, that is, their axes should not be all upright or all horizontal; they should not be parallel or at right angles to each other; and they should not present exactly the same faces; and (7) one of the objects should be partially hidden behind another, even if there are no more than two objects in the group. Look now (8) to see if, in the group that you have made, the objects will appear of the same height when drawn. If so, change them, for the effect will not be pleasing. By skilful questioning, the pupils can be led to these points.

It will be noticed that unity, repose, and variety are emphasized as of particular importance. They are indeed essentials in all good pictorial composition. Both variety and repose should be tributary to unity in any composition. Where unity is lacking, repose is always lacking.

Consider also the arrangement with reference to carrying the eye into the picture. Placing one object farther back than another suggests distance into the picture, which is always pleasing, as it brings with it the feeling of freedom and atmosphere. If one of the objects is placed so that its axis or its leading lines tend from you, it will aid in producing the effect of distance.

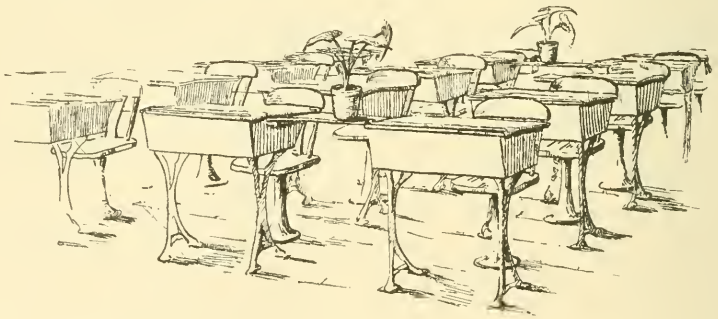
And as a test of the whole, consider the general space relations. These may be shown in a very satisfactory way by enclosing the group, as it were, by observing it through an oblong opening cut in paper, which will make a frame for the group. The hands held first vertically and then horizontally also suggest a frame.

Placing.

Placing Objects or Groups. — Thought should be given to the placing of the various sprays, objects, or groups, so that they may be advantageously seen. It is

always better for a pupil to draw from an object or group on some desk other than his own, to get the softening and unifying effect of distance: and frequently it is well that the object or group drawn should be at considerable distance. After the objects or groups are placed, let each pupil look about the room to find that which he likes the best and which he can see in its best position; for art seeks for the best.

The placing of objects is generally something of a problem. But in the case of an upright cylindric or conic object, which always appears the same, the solution is easy. Boards may be procured long enough to extend across the aisles between the desks. Two such boards would be required for each alternate aisle, one being needed at the front and one halfway down the aisle. Cleats may be screwed on the ends of the boxes of the desk to serve as supports for these boards when they are needed for the drawing exercise. The other aisles will be left free for the teacher or pupils. At the close of the exercise, the boards can be removed and put away.



Other models and objects may be arranged on the desks. Each pupil may pile three or four books far back upon the desk, alternately at the left and right. If there is absolutely no level part of the desk, raise the pile by placing a folded paper under the front, so that there may be a surface about level for the models. On the upper book place a sheet of manila paper, and then arrange the models or objects to make a pleasing group. Be careful that the objects are not too far below the eye.

If branches are to be drawn they may be hung in various places, so as to give the best opportunity for study to the greatest number. If they are hung on the blackboard for the pupils in the front seats, a piece of white or neutral-tinted paper should be placed behind them. A pasteboard folded like a table picture-frame or an open book standing on a board across the aisle serves very well as a support for a small branch.

A spray of leaves or flowers should be studied from all sides to discover its most

pleasing aspect. It is well to have a spray placed in a vase of good form; if that is not practicable, it is frequently possible to keep the spray in good position by placing the end between the leaves of a closed book which is standing. It is well, also, to have the spray at some little distance from the pupil who is drawing it. It may sometimes be desirable to remove part of the stem or a leaf or two, or perhaps to add another spray, in order to get a good effect. The Japanese make the arrangement of leaves and flowers a very serious study. There is an interesting book by Conder on this Japanese art.

Appearance of Objects.

Technical Points. — There are certain technical points and general principles which follow concerning the appearance of objects that every teacher should know. The pupil in the primary and lower grammar grades learns these points simply as matters of experience without definite statement, but in the upper grammar grades generalization concerning these points begins and teachers should be prepared.

Why the Appearance of Objects differs from their Facts. — The appearance of an object as to outlines depends on two conditions: —

1. Its position in regard to the observer. 2. Its distance from the observer.

Position affects the apparent FORM *of an object; distance affects the apparent* SIZE.

The apparent form of any object, except a perfect sphere, varies with every position in which it is placed in regard to the observer.

The apparent size of an object decreases as its distance from the observer increases.

The effect of distance on the apparent size of an object is a matter of common observation. Compare a vertical measurement on the pencil (see page 10) of an object at a distance of three feet, with a vertical measure of the same object at a distance of ten feet.

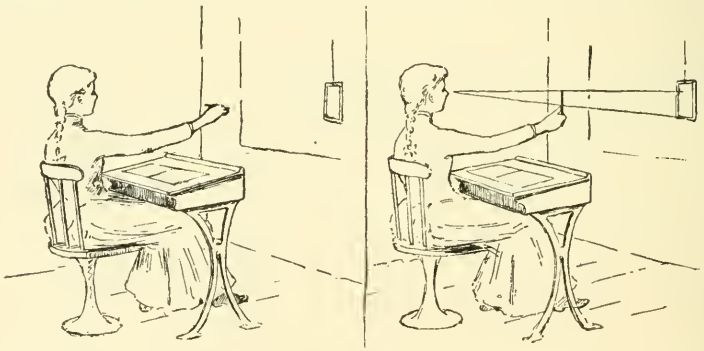
Measurement on the Pencil. — The use of measurement on the pencil is to obtain *proportion*. If pupils do not already know how to measure on the pencil, the following practice is desirable. The teacher draws upon the board at the front of the room vertical oblongs of different proportions. If the schoolroom is wide, it will be better to have several such oblongs, — some at the left, some in the middle, and some at the right end of the board. The teacher gives the following directions, and sees that each is intelligently carried out before proceeding to the next, explaining that the measurement to be taken first is the width of the oblong, — next the height of the oblong. The exercise may be varied by measuring objects in the room, as window-panes, door-panels, etc.

Remember that these measurements give *proportion* only, *not* size.

In measuring horizontally, take great care that the pencil is *parallel* to the line of the eyes; in measuring vertically, that the pencil does not incline either backward or forward, either to the right or to the left; that it is kept in the same plane, as if against a vertical pane of glass directly in front of the eye.[1]

As it is necessary that the distance of the pencil from the object should be absolutely the same while studying any one object or group, all measurements should be taken with the shoulders resting firmly against the back of the chair, and the pencil at arm's length; it will be necessary also to take all measurements with one eye closed.

Position and Practice by Pupils in Holding the Pencil for Measurement. — Sit well back in the chair, with head erect, and shoulders resting firmly against the back of the chair. Grasp the pencil in the middle with the fingers, leaving the thumb, and as occasion demands, the forefinger, free to move along the pencil.



Hold the pencil horizontal and *parallel* to the line of the eyes, at arm's length, with the point to the right. Drop the hand to rest. Hold the pencil vertical (not inclining either backward or forward, either to the right or the left), at arm's length, with the point downward.

Measuring Horizontally. — Sit back in the chair, *close one eye*, and hold the pencil horizontal, at arm's length, with the point to the right, and so that the left end appears to be just at the left side of the form or figure to be measured; move the thumb until it appears to be just at the right side, Fig. 1, page 11.

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[1] These are the accepted rules for measurement, and at present they seem the most practical ones. Cylindric, conic and spheric perspective bring up some problems with regard to these rules that are not yet worked out.

Those who are interested in the subject of perspective problems will find them admirably treated in "Modern Perspective," by Professor William R. Ware.

Measuring Vertically. — Hold the pencil vertical, at arm's length, with the point downward, at such a height that the upper end of the pencil appears to be exactly on a line with the upper side of the form or figure to be measured; move the thumb up or down the pencil until the thumb appears to be on a line with the lower side of the form or figure, Fig. 2, below.

Comparing Two Measurements. — Remember always to take the *same* position (back in the chair, pencil at arm's length) for any two measurements that you wish to compare; *and that the measurements give proportion only, not size.* Take the shorter measurement on the pencil, *keep it by holding the thumb fixed;* turn the pencil and compare this measurement with the longer, by seeing how many times the shorter measurement can be repeated in the longer. Decide carefully upon the proportion between the two measurements.

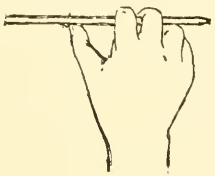


FIG. 1.

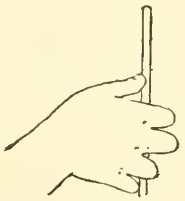


FIG. 2.

As a preliminary to the exercises in Representation, this practice can be given in measurement on the pencil. It is not intended, however, that in the early exercises the objects shall be studied by measurement on the pencil, as it is desired to lead the pupils to see approximately the appearance of objects without this aid. It would be well to call for judgment by the eye first, then measurement on the pencil. And even when measurements on the pencil are made, it must be remembered that they are of assistance only in determining general proportion. It is almost impossible to secure absolutely correct measurements by such means; the eye must always be the final test.

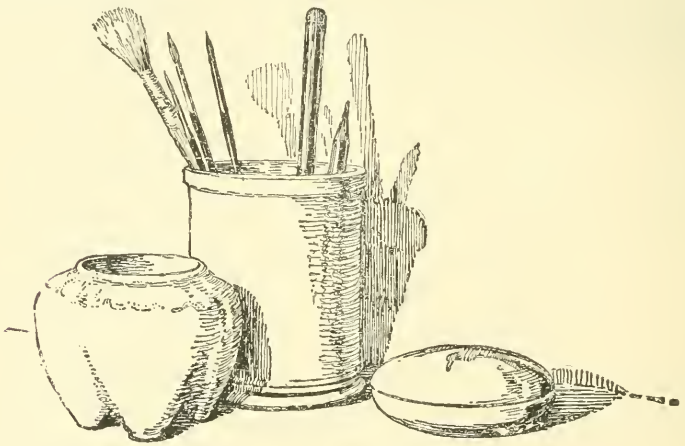
Study of Direction of Edges. — In order to study the direction of a horizontal edge, hold a pencil horizontal and *parallel* to the line of the eyes, at arm's length, with the point to the right. Raise or lower the pencil as the edge to be observed may be higher or lower; but keep it always horizontal and *parallel* to the line of the eyes. Compare the direction of the edge observed with that of the pencil. The observation, by this means, of the upper edge of a door or of a window-blind, open and shut, brings out admirably the difference in apparent direction.

General Principles. — Nearly all the principles in this subject can be gained from the study of the appearance of type forms, the simplest geometric solids. These type forms may be broadly classified as : —

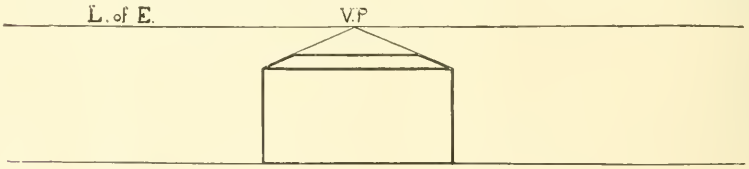
1. Cylindric forms. 2. Rectangular forms.

By observations of such forms, pupils may be led to see, and to express orally and by drawing : —

1. *That a circle seen obliquely always appears like an ellipse.*
2. *That the more obliquely the circle is seen, the more nearly the ellipse approaches a straight line.*

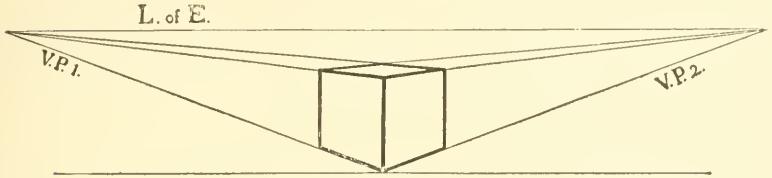


3. *That the less obliquely the circle is seen, the more nearly the ellipse approaches a circle.*
4. *That a horizontal face, when above or below the eye, always appears foreshortened.*

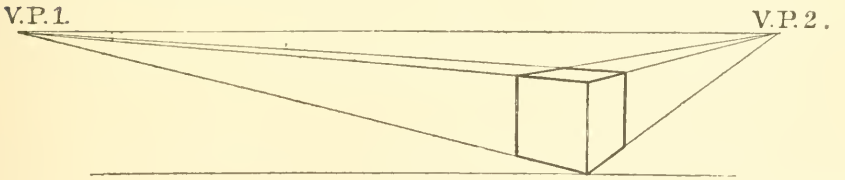


5. *That the farther of two edges, horizontal from left to right, appears shorter than the nearer.*
6. *That all parallel horizontal edges, receding from the eye, appear to converge.*
7. *That all receding horizontal edges appear to incline toward the level of the eye, and must be so drawn.*

8. *That all parallel horizontal edges receding from the eye appear to converge to a point on the level of the eye, and must be drawn so that, if produced, they will meet in a point on the level of the eye* (*L. of E.*).
9. *That parallel horizontal edges receding to the left appear to converge to a point on the level of the eye at the left of the object; those receding to the right appear to converge to the right of the object. These points are called respectively Vanishing Point 1* (*V. P. 1*) *and Vanishing Point 2* (*V. P. 2*).



10. *That for rectangular objects standing with side faces turned equally away, the vanishing points are equidistant from the object.*
11. *That the farther vertical edges appear shorter than the nearer, and should be so drawn.*
12. *That for rectangular objects standing with side faces turned unequally away, V. P. 1 and V. P. 2 are unequally distant from the object, according to the angles at which the object stands.*



The illustrations of the appearance of the group of objects and of the square prism below the level of the eye exemplify principles 1–8. The illustrations given of the cube turned and below the level of the eye are an exemplification of principles 6–11. These principles can also be confirmed and impressed by the study of square plinths above the eye, as in the case of the abacus of a column. The illustrations of these principles are made from models, as the exact forms of the models show the application of these principles more clearly than irregular objects would do. It is delightful to see how pupils will deduce the essential laws of the change in the appearance of objects in different positions, from their own observation. This deduction, however, should not be forced, but should come as a natural growth.

Rendering.

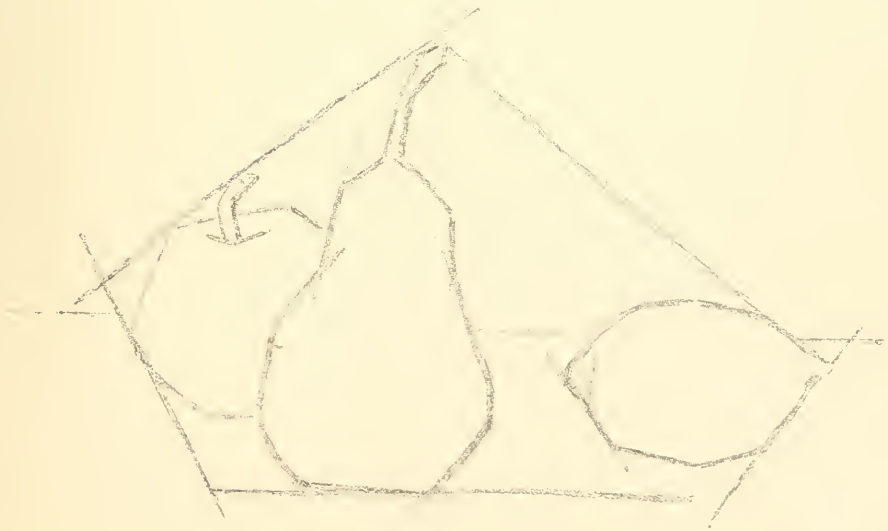
Outline, Light and Dark, Light and Shade. — There are three ways of carrying out a picture with pencil, pen, or brush in monochrome — in *outline*, in *light and dark*, in *light and shade*. In *outline*, as has been said above, the lines should vary according to texture and importance and a slight expression of light and shade may also be given.

In what is known as *light and dark*, color contrasts and values are shown by means of masses of *light and dark*, sometimes in two tones, sometimes in more. Examples of expression of color and of pleasing space relations by light and dark will be found all through the drawing-books, notably in the illustrations from the Japanese and those by Arthur W. Dow.

In *light and shade*, the effect of sunlight and shadow is represented. See **Light and Shade**, page 16. Color effects shown by light and dark and the effects of light and shade are frequently found in the same drawing.

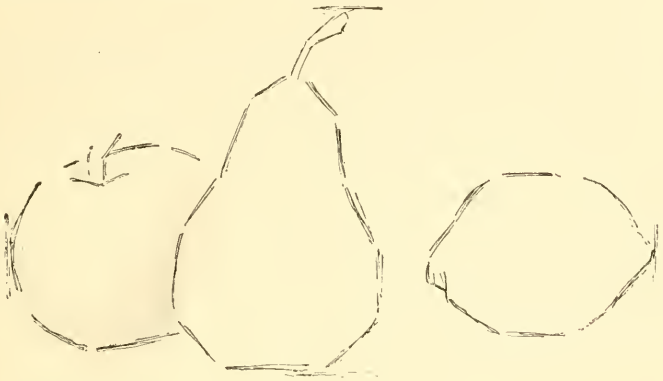
Blocking-in. — It is a great art principle to look for the mass first, whether in form, or in light and shade. Every exercise in Representation should tend to fix this great principle. Blocking-in — that is, getting the general shape and proportion in the quickest and simplest manner possible — is one of the means by which attention is directed first to the mass, the object as a whole, rather than to the details — to the group as a whole, rather than to individual objects in the group. Therefore it is well to block in an object or a group. But very few lines should be used; for if every change in direction should be represented by a line, the process of blocking-in would become that of studying details. See Plate I and also the illustration on page 15.

You will note that the blocking-in lines sometimes touch the outlines of the objects, sometimes cross them, and sometimes do not touch them at all, as there may sometimes be subordinate objects or outlines, that do not affect the outer limit of the group. The blocking-in lines may be continuous, or may be simply indications of direction. The illustration, page 15, shows how a few lines will bring out the general mass; a few more have been added to bring out each object as a whole. The special points in blocking-in are proportion of the mass, shape of the mass, size suited to the space. There is no rule for blocking-in which excludes any of these conditions; any of these ways may be taken which will help to express the general shape of the mass. Whatever way is taken, however, blocking-in lines should be very light, that they may not interfere with the later stages of the drawing. And there should not be a feeling that they must be absolutely adhered to; it frequently happens that changes are found necessary as the drawing progresses.



Blocking-in.

Blocking-in has more than the immediate effect of getting the shape of the particular thing to be drawn. It induces a habit of mind ; it leads to study of the mass everywhere, to large views, to looking at the whole before the parts, beginning first in judgment of form in mass, then in detail of a group of forms, continuing this habit in judgment of actions and of events.



Quality of Line. — Every drawing should show a feeling for the character of the material of the object drawn. This is always seen in what is called **artistic rendering.** Natural objects differ from manufactured objects in substance and texture, and they have varying outlines. The wooden models are exact in form and outline ; therefore, in drawing their outlines, a more definite but still transparent line should be used.

Outlines not only vary in direction, but are more decided and definite in some parts than in others. This variation in direction and in definiteness is expressive of the varying forces of life and growth, and must be rendered by a similarly varying line in the drawing. A lemon, being somewhat indefinite in outline, on account of the peculiar texture of the skin which holds its delicious fragrance, should be drawn with a line varying in thickness and not quite continuous. The skin of the apple is smoother ; this will need a somewhat lighter line and more continuous throughout than the line for the lemon. Remember also that it is the general form which should be expressed, and not the small details.

Table-Line. — In order to show that an object or group is resting on something, and thus to give an effect of rest in the drawing, what is called a **table-line** is frequently added. This line represents the farther edge of the table or shelf on which the object rests. Place an apple on a book slightly below the level of the

eye, and observe how high up on the outline the farther edge of the book appears to be. This will help you in drawing the *table-line*. In order to have the table-line properly observed, the teacher must see that objects are not placed too near the farther edge nor too far in front of it. In the former case, the table-line will appear too low, and as if the object were in danger of tumbling off; in the latter case, the table-line will appear too high, and as if the object were surrounded by too much space. A good general rule is to place the object so that the farther edge of the table or object on which it rests will appear to be less than halfway up the height of the object. The table-line should always be made a little lighter than the line of the object, to express distance and subordination.

Rendering of a Group. — Having blocked in the group, the next thought must be how to finish it so that it may best tell its story. The *rendering* of a group of objects — that is, the quality and the variety of line used — should be such as to suggest the leading ideas of a group. Therefore, in completing any drawing, keep in mind the whole thought which is to be expressed, and aim to express as far as possible by the rendering, the same ideas that were specially considered in the arrangement of the group.

The Principal Object. — It is necessary that one object should be more noticeable than others, in order to have the eye at once attracted. The principal object in a picture may not be consciously observed first, but the eye finds there a resting-place; if, on the contrary, there are two or three objects equally prominent, the eye is distracted, and the attention wanders. The principal object should be drawn in such a way as to attract the eye at once.

Secondary Objects. — One object alone is not so interesting as a group of objects; for an agreeable element of contrast is added by means of the relation of other objects to the principal object. As they are subordinate to the principal object, they should be rendered by lines not as strong and not as definite as those of the principal object.

Distance. — The effect of distance into the picture, obtained by the placing of some of the objects farther back than others, must be expressed in the rendering by making the lines for the farther objects somewhat lighter and less definite than those of the principal and nearer objects. By the addition of a background, there will be in such an arrangement, **foreground, middle distance, background.**

Light and Shade. — In addition to the expression of distance, an emphasis on the side of the objects opposite the light, to suggest shade, will also add to the effect. If the light comes from the left, — as it should in every schoolroom, — the right side of the objects would be in shade, and hence the right side should be emphasized. But the light comes from above also, so that the lower part may also

be strengthened. These dark lines suggest shade, but they also suggest light; for there would be neither shade nor shadow were it not for the light. So the touches for shade really introduce the thought of light into the group.

Still further the shade and shadow may be expressed by lines, varying according to the degree of shade and shadow, as illustrated in the Drawing-Books, and on Plates II and III.

Look at any object placed in the light; the part toward the light is of a different tone from the part away from the light and the object casts a shadow. We have, then, **light** on the part toward the light, **shade** on the part away from the light, and the **shadow** cast by the object — three distinct conditions as regards the light. These conditions, generally included under the term **light and shade**, are to be studied in this exercise.

When the light comes but from one part of the room, the *light* on the object is strong, the *shade* and *shadow* are well defined. If light comes from two or more directions, there will be cross lights, which will cause perhaps two or three shadows mingling with each other, and render the limits of shade and shadow vague. In any elementary study of light and shade, therefore, the light should be arranged as far as possible to fall in one direction.

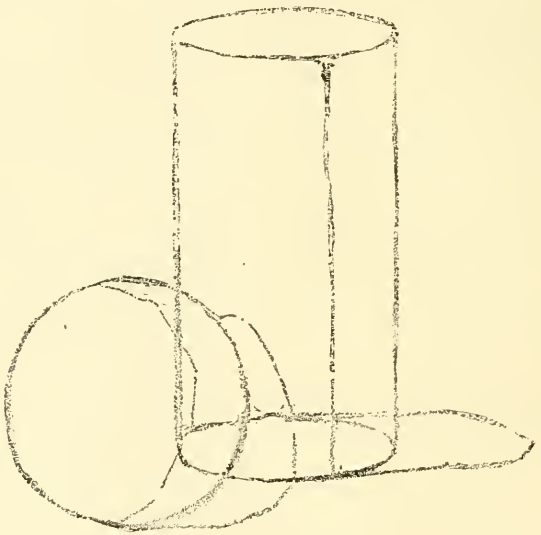
The best effects can be obtained in a schoolroom where the light comes in from the side alone.[1] If the room is lighted from one side and the back, shut off the light from the back and from all but one or two windows at the side. If the lower part of these windows can be screened, it will be better. In the case of cross lights, only the strongest shades and shadows should be studied.

Study of Effects. — Even more care is necessary in the arrangement and placing of objects for study of light and shade effects than for mere outline drawing. A group of two or more models affords more variety and contrast than if but one model is taken. Suppose the sphere and cylinder to be chosen. Lead the pupils to discover that the sphere slightly in front of the cylinder makes a more agreeable arrangement than beside or behind the cylinder. To keep the spheres stationary, place them on tiny brass or rubber rings, which may be bought by the box, and distributed and collected with the models.

If the teacher, in preparing for this lesson, will work at a pupil's desk, any peculiarities in the situation will become apparent. Observe the general form of the whole group — the proportion of one model to the other. Sketch lightly, but carefully, the cylinder and sphere. Half close the eyes, and look carefully at the

[1] Where position can be chosen, it is well to place the objects so that the light comes from the left and above, for elementary work. The light on the drawing will not then be obstructed by the hand.

shade upon the models and the shadows cast by each model upon the paper. You will see what artists call **the breadth of light** and **the breadth of shade** on the models — that is to say, the light side as a whole, and the dark side as a whole. Still "looking through the eyelashes," see how far the *breadth of shade* extends upon the cylinder, upon the sphere — the shape of the shade. See the illustration below. With a line so faint that it will not be observed when the shade is expressed, sketch on the drawing of the cylinder, the blocking-in of the limit or outline of the shade — the same upon the sphere. Study the cast shadows most carefully as to general shape — they often fall in a most unexpected way. The foreshortening on a



horizontal surface must not be forgotten, and the absolute change of general direction when continued on a vertical surface. Notice the shape of the cast shadow of the cylinder, of the sphere, and that the shadow of the sphere may run up on the cylinder. Block in very lightly the outlines of the shadows wherever they fall. It must be borne in mind that the shades and shadows will be different for each pupil. Each one must study for himself. Those in the front seats may get the light a little over the shoulder, so that their shades and shadows will not be like those for whom the light falls more directly.

Now give careful study to the relative tones of the light, shade, and cast shadow. Which is lightest? Which is darkest? Which is the middle tone? Cast shadows

are always slightly darker than the shade upon objects. Look at various objects upon which the light falls from one direction for examples.

Expression of Shade and Shadow. — Keep at first to simple breadth of light, breadth of shade, and cast shadow. Express these planes by drawing simply, first blocking-in as on page 18 and then showing planes of shade as in Fig. 1, Plate II.

After this is attained, a closer study of effects — of the contrasts and relations of light and shade — of what are known as **values**, as on Plate II, may be undertaken. Where is the deepest tone of shade? Express this, studying the method shown in Fig. 2, Plate II. As the study progresses, the tender gradation and flow of shade will become more and more visible, and the beautiful relations of light and dark will appear more and more. Figs. 1 and 2, Plate III, show how different planes and values are expressed. Study all of these illustrations, and observe the different handling or *technique*. Remember that each medium used in drawing should be handled in its own way. It is not well to work with the pencil for a scumbled effect similar to charcoal, — the touches of the pencil should be definite and sure, but not mechanical. The methods illustrated here are not to be taken as rules given, but as suggestions and helps. The blocked-in method, keeping planes of light and shade according to mass, is very good for beginners. Notice that there is a difference between a drawing merely suggesting light and shade by emphasis, and one in which light and shade is studied for relations and values.

Notice that in all the illustrations the lines are parallel and close enough to merge a little, and not close enough to cover the surface of the paper; that in the illustrations, Figs. 1 and 2, Plate II, showing breadth of light and shade, or planes of light and shade, the lines are oblique, except on a horizontal surface. This direction is preferred because it seems the nearest to neutrality; that in the illustrations showing more of values, Figs. 1 and 2, Plate III, the direction of the surface is expressed by lines, straight lines being used for plane faces and curved lines for rounding faces; that when a shadow falls upon a horizontal surface it is expressed by horizontal lines, and that if a part of the same shadow falls upon a vertical face or surface, the lines expressing the shadow are vertical. These suggestions as to direction of line must not, however, be considered as absolute or prescriptive.

The strengthening of the outline away from the light that is practised in outline drawing is omitted in light and shade drawing. The limit of the model is expressed by the shade. Always trust as far as possible to the mass of shade to define the form.

Variety. — The element of variety will appear in the rendering already suggested. In addition it must be remembered that the texture of the line should vary according to the character of the object. If the object is manufactured, the edges and profiles will be sharper and more even than those of a natural object. The

edges of the models are well defined. The outline of fruit shows yielding irregularity; the outline of leaves and flowers is tender and delicate. These qualities should be shown in the line.

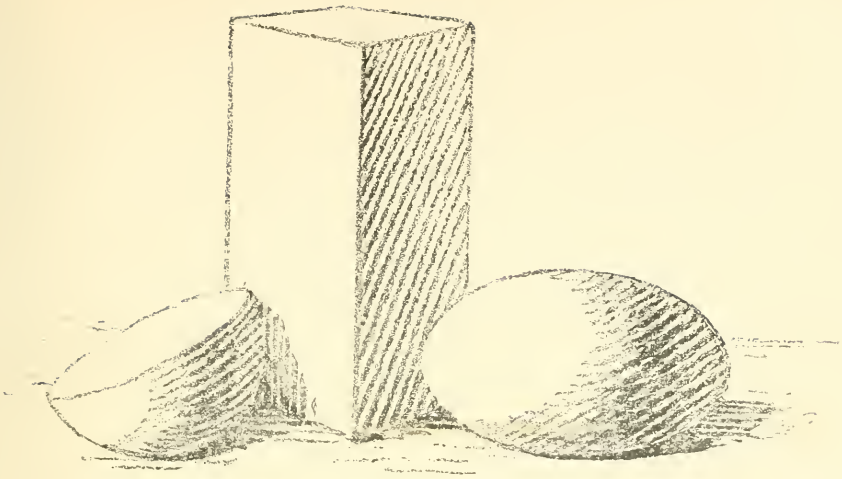
Unity. — The effect of unity produced by the arrangement of the objects can be increased in the rendering by putting the emphasis on the principal object, and keeping the others in their proper relation. This can be done not only by keeping the secondary objects more subdued in line than the principal objects, but also by a greater omission of detail.

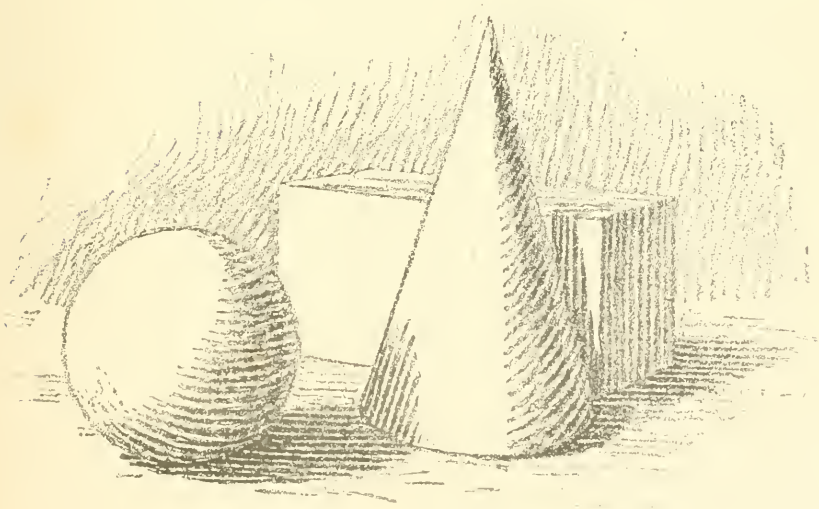
Repose. — This is one of the highest qualities in pictorial composition, but some of its elements may be brought out even in early work. The effect of repose is produced by the proper and restful arrangement of objects. This effect will be increased in the rendering if the transitions from light to dark, from definite to indefinite, are gradual and not violent. The table-line is a very necessary, though minor, element of repose, as it gives the idea of support. It should be in lighter line than the group.

Values. — The proper relation of objects in regard to their importance in the group or picture is expressed by what are known as **values.** The rendering must be such that it will show the relative importance of the parts of a group or a picture — that is to say, the *values*. In artistic rendering of outline, the principal and the secondary objects, the nearer and the farther objects, the light and the shade, are all made manifest by the difference in quality and emphasis of line. The principal object has the strongest emphasis or accentuation, and all other objects receive less in proportion to their importance. This must be carefully borne in mind; for an eager worker often forgets the need for expressing the relation between the principal and the subordinate objects, and emphasizes equally the shade on all, ignoring values, and producing a staring and "spotty" effect, quite different from that produced when a due regard is paid to subordination of the less important, and appreciation of the more important, parts. From what has been said, it will be seen that in the rendering of secondary objects, strong contrasts should be avoided; the effects of the secondary objects as a whole should be subdued.

In the treatment of light and shade and shadow, the study of values can be carried much farther, of course, than in outline, as in Plates II and III; and the values can be most subtilely expressed.

When a picture is worked up toward full values, there will appear *foreground, middle distance, background.* These may be carried out even in a simple group — the principal object being in the foreground, the secondary objects being in middle distance, the background being added as in Fig. 2, Plate III; see also Plate II. In rendering, the foreground should have the stronger, clearer touches, the middle





Groups of Models.

distance the more subdued touches, and the background should be entirely subordinate, fainter and less defined than any other part of the picture. Remember, however, that the background should be drawn with careful control, and with a consideration of its purpose. Herein lies the lesson of restraint, as valuable in life as in art.

Expression of Feeling. — In representing natural objects, a greater variety of direction must be distinguished and represented than with models. The teacher is not to analyze the rendering of printed reproductions further than to ask the pupils to note the expression of masses, the direction of the several lines, and how they adapt themselves to the surface to be suggested.

All good rendering of natural forms requires elimination on the part of the artist or worker. Skill and genius are shown in selecting what to depict as conveying a characteristic impression of the object, and this involves an understanding of what to omit. This selection is again largely a matter of individual feeling, and it is here that there is infinite opportunity for independent expression.

As the artist feels for the surface of his object, he unconsciously adapts his lines to expressing this feeling. Feeling counts for more than physical seeing in all nature work.

Remember all artistic rendering of nature is a translation, not an imitation — an imitation of nature is always imperfect and unsatisfactory; in seeking for realistic details the spirit is sacrificed. The truth of realism must always be partial and one-sided if it starts on the basis that the physical senses are the measure of the human soul. The truth of idealism is the all-embracing truth of art, and that to which it is consecrated.

Copying Good Examples. — The work in Representation should not be confined to drawing from models and objects only; there should be good and careful study through copying good examples. The copying should not be superficial and imitative, but should be rather an endeavor to enter into and represent the feeling of the one who drew the example. True copying is endeavoring to see and to draw what the eyes of another and a greater has seen as shown through his representation; drawing from models and objects is seeing through one's own eyes. To the advantage of personal experience in any study there should always be added the advantage of the richness of others' experience. The work in Representation should be presented by the teacher in this spirit, developing in the pupils, not merely reliance in their own ability to see and to draw, but also an appreciation and admiration for what has been done by others, with a desire to attain through earnest study to real art expression.

Remember that a drawing may be absolutely correct as far as giving the principles governing the appearance of an object or group or scene is concerned, and yet wholly without what is known in art as expression. Lead your pupils through the study and sympathetic drawing of good examples, through a store of associations in literature and in life, through a spirit of recognition and appreciation, to a conscious feeling for the beautiful, and a desire for its expression in drawing.

Decoration; or, Drawing as Applied in Ornament.

Decoration is the science and art of producing beauty in ornament. Ornament, the product of purely decorative art, is always employed to beautify objects created for some purpose, independent of their decoration. It is truly an expression of love for the object — a desire to make it beautiful. It produces its legitimate effect when, without concentration upon itself, it makes the object to which it is applied more pleasing than if unadorned.

Lead pupils during their study of ornament to the discovery of the principles which have been given and to the use of them in decorative design. Decorative design is closely akin, in many ways, to music: it has rhythm and accent through repetition, melody through curvature and color, and harmony through proportion and relation of parts to make a "perfect whole." It will not be difficult for a teacher to make these analogies apparent. All art is one, whether of word, form, sound, or color.

Creative Power. — The subject of Decoration opens a wide field for creative power — for the expression of the individual. Gradually the pupil should be led through sequential exercises involving modes of arrangement, space relations, and distributions as well as the study of fine examples of ornament, to the expression of his own ideas of the beautiful in terms of art.

Mere acquisition, whether of money, knowledge, culture, or æsthetics, is selfish; and all selfishness is barren. Whatever the subject may be in education, it should aim to ultimate in productive power through creative activity.

In the subject of Representation, the aim is to reach this end not only through practice in drawing the appearance of objects and study for its principles, but also through Representative Design or pictorial composition. So in the subject of Decoration, aim to increase the productive power of the pupils by leading them to a realizing sense of the need for architecture and ornament to meet the requirements of life at the present day. This can be done by giving some very simple problems

in planning a room, in considering its coloring, its decoration and furnishings, and also in designing oblongs of good proportion, corresponding to the shape of one external face of a building. Within these oblongs may be arranged other oblongs, corresponding to openings for doors and windows of good proportion in themselves and bearing the proper relationship to each other and to the external oblongs. Such problems will lead to the consideration of what is fitting and beautiful in buildings, as well as in details, and will bring up inquiry as to the general principles of good taste.

As a means of answering this inquiry, lead pupils to study fine historic architecture and ornament (that which has been accepted as exemplifying the beautiful in form and proportion), to see how the principles which underlie all design and which make for the production of the beautiful have been applied.

The study of historic architecture and ornament may be made vital by first considering the conditions under which it was produced, and by indicating how the architecture and ornament were responsive to the conditions. Such study will lead the pupils to an appreciation of fine types of ornament and will cultivate their æsthetic judgment, inspiring them to apply the principles of beauty in modern problems.

Thus creative activity, stimulated and enriched by the study of the beautiful in ornament, will ultimate in productive power.

Subordination. — Fitness to its purpose is the underlying principle — the very corner-stone of all good ornament. From this principle of fitness for its purpose there arises the fundamental law of ornament — subordination. This law requires THAT ALL ORNAMENT SHALL BE MODEST AND MODERATE. Strong contrasts and striking effects violate it. Illustrations of this requirement in matters of good taste in general are familiar to all. A loud voice in conversation is not excusable; a forward, self-asserting manner is a mark of ill-breeding; gaudy colors in dress are shunned; showiness, or any other attempt to attract attention, is condemned. This requirement holds good in all ornament, whether architectural, domestic, or personal. He is not well dressed whose dress is conspicuous; that house is not well furnished where the furniture is obtrusive; that building is not well ornamented whose decoration is not subordinate to the idea of the building.

Sources of Ornament. — Ornament has two sources — Nature and Geometry. In the minds of many these are widely separated. Geometry is too often considered as simply a treatise on an assemblage of figures and forms which have no particular meaning except as a basis for mathematical study. Such a view is most inadequate; for geometry is really the study of ideal and typical forms, which while not discoverable in a perfect state in nature, are deduced by man from a study of nature.

"Above, below, in sky and sod,
In leaf and spar, in star and man,
Well might the wise Athenian scan
The geometric signs of God,
The measured order of his plan."

— JOHN G. WHITTIER.

Nature presents no ideal forms: these are the result of man's thought led by nature. The forms of geometry are ideals conceived by man in "Thought's interior sphere," as archetypes of nature; they are the forms toward which nature in evolution is constantly tending. Nature and geometry are, then, but different manifestations of the divine law. A thoughtful consideration of nature will show geometric plans and forms, and modes of arrangement, in her handiwork. Order, symmetry, and proportion are all exemplified in nature in varying degrees.

Materials of Ornament. — The materials of ornament are: —

1. Geometric plans, enclosing figures and units.
2. Conventionalized units derived from natural forms as motives.
3. Historic ornament.

But, in order to use these materials effectively, it is necessary to study: —

a. Geometric construction and symmetric arrangement.
b. The proper use of plant forms as motives.
c. Well-selected examples of historic ornament.

Symmetric Arrangement. — The principal forms of arrangement (all requiring more or less of geometric construction) are, as shown in the illustration on page 25 —

1. A surface design, to cover a surface, as in wall-papers, carpets, drapery, and textiles in general.
2. A border, to limit a surface or a surface-covering.
3. A single arrangement, complete in itself, as in a bilateral unit, as the lotus and the fleur-de-lis, or as in a rosette or centre.

The *parts* of a design common to the three are: —

a. The enclosing figure.
b. The geometric plan, which embraces not only the general geometric outline, but also the lines and divisions required by order and symmetry for the construction of the design, — axes of symmetry and field lines.
c. The units or motives, which are repeated in making the design.
d. The ornament itself, or the filling.
e. The background or field.

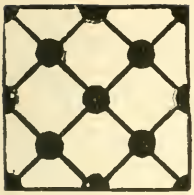


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

SURFACE COVERINGS.

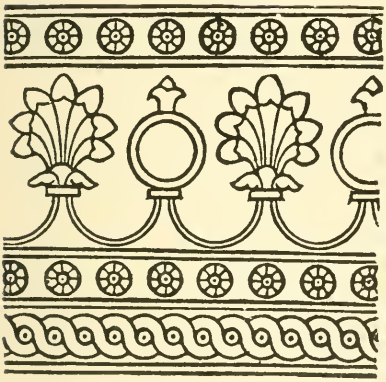


FIG. 5.

FIG. 6.

FIG. 7.

BORDERS.

Egyptian. Greek. Roman. Byzantine. Saracenic. Gothic.

FIG. 8.

FIG. 9.

FIG. 10.

FIG. 11.

FIG. 12.

FIG. 13.

FIG. 14.

FIG. 15.

FIG. 16.

FIG. 17.

FIG. 18.

FIG. 19.

FIGURES COMPLETE IN THEMSELVES.

Nature in Ornament. — The laws of growth, which are recognized and recognizable in all good ornament, are derived from the laws of growth in nature. It would be a mistake, however, to conclude from what has been said that a pictorial imitation of nature is good in ornament. A pictorial imitation of nature represents the accidents of growth. Order, regularity, and symmetry are the normal laws of growth, while the irregular is accidental. This idea is developed in the treatment of conventionalization.

"Flowers or other natural objects should not be used as ornaments, but conventional representations founded upon them, sufficiently suggestive to convey the intended image to the mind, without destroying the unity of the object they are employed to decorate. *Universally obeyed in the best periods of art; equally violated when art declines.*"

"In all the best periods of art, all ornament was rather based upon an observation of the principles which regulate the arrangements of form in nature than on an attempt to imitate the absolute forms of those works, and wherever this limit was exceeded in any art it was one of the strongest symptoms of decline."

— Owen Jones, *Grammar of Ornament.*

"We owe the beauty of nature the full tribute of our respectful appreciation, but we should never degrade her loveliness by putting it to unworthy service. The picture-painter throws his whole power into the attempt to reproduce natural truth; but the designer, feeling the limitations of his materials, and the purpose to which his work must be applied, takes a different view, not because he appreciates nature less, but because appreciating it so much he cannot bring himself to do it discredit by inadequate representation.

"We need scarcely say that any one attempting naturalistic work should have a good working knowledge of plant-structure, and even if he would hesitate to call himself a botanist, should be well acquainted with the leading laws of plant growth. A wild-rose spray, in all its picturesque beauty, is as much constructed according to law as the designer himself; the spiral growth of its foliage, and the beautiful foreshortening, therefore, of the parts that result from this rigid law, is as marked as any other law of nature; and it is no more permissible to add a sixth to the ring of five fragrant petals in each of its beautiful flowers than to consider it immaterial whether we put four, five, or six toes to the human foot." — F. Edward Hulme, *Birth and Development of Ornament.*

"This must be accomplished not by the mere imitative rendering of flowers and foliage, which is a means of study, but not the end; the ornamentist must be a much deeper student, if he would found a new style. If he seeks out the mode of development of vegetable growth, he will find that regularity and symmetry are the normal laws, while all that is irregular is accidental and extraneous."

— Richard Redgrave, *Manual of Design.*

"The imitation of natural objects for merely ornamental purposes usually disagrees both with the materials used and the place where they are introduced. It is also an indication of poverty of invention, and a deficiency of taste for design. In carpets, where roses and other flowers are figured, the very best rose is always unlike the reality, while the imagination is diverted from the general effect by the comparison of this imperfect copy with the natural flower. To obtain ideas for ornamental art, nature should be carefully studied and the beauties she presents should be fully understood, but she should not be directly copied in an unsuitable material."

— Sir Gardner Wilkinson, *On Color and Taste.*

"There can be no question that the motive of ornament is not the presentation of natural images to the mind, but the rendering the object ornamented as agreeable as possible to it, and therefore the details of decoration should have no independent character of their own, but be kept purely subservient to beauty of effect.

"The designer must ever remember that the effect of the whole should never be interfered with by any partial attraction of the details."

— R. N. Wornum, *Analysis of Ornament.*

"Experience proves that the fitting opportunity for realistic ornament very seldom occurs. It is for the most part contrary to the purpose or position of the object, ill adapted to the material and the method of working it, and most especially it is calculated to draw undue attention to the object, or, which is worse, to itself. A more subdued and reticent and altogether simpler style of design is almost invariably found to be advisable, either in the shape of pure ornament or in some adaptation of natural forms."

— Lewis F. Day, *Some Principles of Every-day Art.*

"The right method of studying nature does not consist in merely gathering her facts and applying them indiscriminately to any object as decoration, but in the endeavor to understand the principles upon which nature works, so that we may use her endless treasures with artistic wisdom. Moreover, by adopting this mode of studying nature we shall find that all the records of ancient art will have a new meaning for us."

— Frank G. Jackson, *Lessons on Decorative Design.*

"Ornament should be natural; that is to say, should in some degree express or adopt the beauty of natural objects. Observe, it does not hence follow that it should be an exact imitation of, or endeavor in any wise to supersede, God's work. It may consist only in a part adoption of, and compliance with, the usual forms of natural things, without at all going to the point of imitation; and it is possible that the point of imitation may be closely reached by ornaments which, nevertheless, are entirely unfit for their place, and are the signs only of a degraded ambition and an ignorant dexterity. Bad decorators err as easily on the side of imitating nature as of forgetting her, and the question of the exact degree in which imitation should be attempted under given circumstances is one of the most subtle and difficult in the whole range of criticism."

— John Ruskin, *Two Paths.*

Idealization. — The subject of conventionalization is frequently misunderstood. Some, having a totally wrong impression of conventionalization, think of it only as a means of taking all the life and grace out of a leaf or a flower, and reducing it as nearly as possible to the hard lines of a geometric figure. This is a wholly wrong conception. True conventionalization is idealization; it searches for the life and the marvellous manifestations of growth in the leaf or flower. Natural leaves are more or less unsymmetric; a leaf type would usually be symmetric; idealization rejects the occasional irregularity, and accepts the beauty of symmetry in the type form. Idealization seeks in the natural leaf for the beauty of symmetry, the beauty of general form, the beauty of radiation, — or, as it might be phrased, the beauty of stability, — the beauty of proportion, the beauty of general curvature, and renders them in the idealized leaf. Every line of the conventionalized or idealized leaf can be traced as typical of the natural leaf.

Pupils should be led to seek for type forms of natural leaves by comparing many leaves of one kind, and to discover and express the peculiar beauty of each type form. This will be true conventionalization.

The purpose is entirely distinct from that of botanic study. In botanic study, the various parts and organs are studied with minuteness, and all the wonderful structure is revealed. In studying a flower for decorative purposes, the details are not taken up, unless for a special end; but the general plan as to form is studied, and is rendered with faithfulness to the type form, and not to the individual.

Lead pupils as deeply as possible into the study of nature, in order that they may see for themselves the *spirit* of the plant which they are studying, as well as the more formal matter of arrangement. Then let them *idealize* plant forms for use in ornament, by keeping the characteristics of growth, curvature, and proportion, while simplifying outlines and omitting details.

Historic Ornament. — In the past, many nations have produced certain ornament so repeatedly that the ornament has become characteristic of those nations. As the account of what nations have done is called history, so the ornament produced by nations is called **historic ornament.** Different nations have developed different kinds of ornament; each kind, however, has a character or style of its own, hence styles of ornament are spoken of. The great historic styles are: the Egyptian, Greek, and Roman, — the ancient; the Byzantine, Romanesque, Saracenic, and Gothic, — the middle age; and the Renaissance, which may be called the modern. Among the ancient styles, the Assyrian and Persian are ranked as secondary, but they are coming more and more into prominence as new discoveries are made. The Persian, Indian, Chinese, and Japanese are called the Oriental styles. All of these would be taken up in a more advanced study of historic ornament.

The study of special styles is begun in Book 7, and pursued in the order given above. This will lead to an appreciation of the characteristics of each style as well as of the influences which formed the style. As the study progresses, the interrelation of these styles will be seen.

The beauty produced by finely proportioned and delicately contrasted spaces should be emphasized in all study of historic ornament. The gradual training of the eye and the mind to a fine appreciation of this important element will lead the pupils to a right understanding of what constitutes good work, and will ultimately express itself in their creative efforts.

The study of historic ornament as one proceeds leads to its interpretation as a visible manifestation of the history, life, and spirit of the people who produce it. The contact of various nations or peoples, either through war, commerce, or travel, can be traced in their ornament; and it is an evidence in the various phases of progress and civilization.

From Antæ, Temple at Eleusis.

Good historic ornament is always ennobling, for it is an expression of the best and most enduring feeling; it is, in a very high sense, "a survival of the fittest." A lesson in historic ornament may and should be not merely a lesson in drawing, but also, to a greater or less degree, a lesson in history and æsthetics, in living and in doing.

Decorative Design. — Historic ornament serves as a broad field for the discovery of those elements which make for beauty in decorative art. The study of good examples of ornament leads to the development of certain general principles. It is found that unity is essential to the production of beauty in ornament. Unity requires that the effect of a design, as a whole, should be considered, and that the parts should be subordinate to the whole effect.

The leading principles which through unity lead to the creation of the beautiful in decorative design may be stated as —

SYMMETRY,	ORDER,	BREADTH,
PROPORTION,	CONTRAST,	STABILITY,
RHYTHM,	INTRICACY,	REPOSE.

Symmetry. — Symmetry is produced by balancing the parts one against another. The balance may be of form (page 25) or of value (Antæ, Temple of Eleusis illustrated above). Figures may be bi-symmetric or multi-symmetric; in other words, there may be symmetry on an axis (Figs. 14–19) or about a centre (Figs. 8–13, page 25).

Proportion. — "As in every perfect form of architecture a true proportion will be found to reign between all the members which compose it, so throughout the decorative arts every assemblage of forms should be arranged on certain definite proportions; the whole and each particular member should be a multiple of some simple unit of proportion."

The units of a design must not be too small in proportion to the ground to be covered. The ornament or filling should, as a general rule, occupy about two-thirds of the space within the enclosing figure. Color as well as space values should, however, be carefully considered as modifying elements. (See also Intricacy, below, and Proportion, page 47, under Composition.)

Rhythm. — As the effect of rhythm in music is produced by the regular recurrence of measures of time, in decoration, it is produced by the regular repetition of the parts of a design. There are three ways of repeating units of design: (1) to cover a surface; (2) on a straight line; (3) around a centre. (See pages 24 and 25.)

Repetition may be close or open, simple or alternate. In close repetition, the units touch each other; in open repetition, a space intervenes. In simple repetition, one unit only is repeated. In alternate repetition, two or more units are repeated, one alternating with the other. Counterchange and interlacing are forms of alternate repetition.

Order. — Order, so essential to the beauty of a design, depends upon a definite plan of geometric arrangement. This plan is secured by enclosing forms, axes of symmetry, and field lines for the units. (See pages 24 and 25.)

Contrast. — In a decorative design, there should be a pleasing contrast of direction or directness in line, of proportion in space, of shape in figures, of tone and hue in color.

Color may be produced by the brush, by colored paper, or in a representative way by half-tone. Half-tone is produced with the pencil or pen by covering the surface evenly with lines or by pencil painting, and may be employed to distinguish the ornament from its background (page 58). Half-tone may be used either upon the background or the ornament; whichever covers the least surface should be in half-tone. When there is more half-tone than white surface, the design is likely to appear heavy. Mechanical results are not desirable in half-tone in freehand work.

Intricacy. — There is great beauty in that intricacy of form produced by subtility of proportion and curvature. The simpler the proportion, and the more easily it is detected by the eye, the less pleasing is the effect; while the more subtile the proportion, and the more difficult it is for the eye to make it out, the more pleasing is the effect. So, also, the more subtile of two curves affords the eye the greater pleasure. Compare the circle and the oval.

Breadth. — There is much more beauty in the simple arrangement of good, well-drawn figures, having a large proportion to the surface which has to be covered, producing a certain strength or breadth of effect, than in a profusion of complicated details on a small scale. If there are subdivisions of units, they must be made subordinate to the effect of the unit as a whole.

Stability. — The union of parts produces stability. In a surface design, this union is secured by its enclosing figures; in a border, by its marginal lines; in a rosette, by a strong central figure or a tendency toward the centre.

Repose. — It is essential that there should be repose in ornament; that is, there should not be too violent contrasts of form or of color in the parts, but they should harmonize while they vary.

Curved lines should unite tangentially with curved or with straight lines. Tangential union showing laws of growth is a simple example of harmony. (See below.)

Study of Growth. — By observing plant forms and tree growth, it will be seen that in a general way plant growth falls into three classes as to direction, — erect, as in trees and shrubs (under this head may also be placed **ascending** growth, rising obliquely from the root); twining or climbing, as the morning-glory, the pea, bean, and nasturtium; the running or creeping, as the strawberry. Erect growth is suggestive in its vertical symmetry for bilateral units in ornament, and in the radiation seen in the top view for arrangements about a centre. The **twining** or **climbing** plants suggest spiral growth in ornament, and the running plants give motives for horizontal ornament and for a garland treatment.

Tangential Union. — The law of tangential union, always observed in nature, should govern decorative design. Owen Jones states this law thus, "All junctions of curved lines with curved, or curved with straight, should be tangential to each other," or, in other words, they should be so drawn that they would touch, but if produced would not cut each other. Owen Jones further says: "Oriental practice is always in accordance with it. Many of the Moorish ornaments are on the same principle which is observable in the lines of a feather and in the articulations of every leaf; and to this is due that additional charm found in all perfect ornamentation, which we call the graceful." It may be called an example of harmony of form. The suggestion here given of the interrelation of beautiful form and music opens a wide door.

Tangential union applies to all lines starting from a central line or stem; hence the lines of division in a unit should unite tangentially, the sides branching from the central division, and all uniting in the stem or trunk below. The law of tangential union should govern the union of the divided parts of a unit. Tangential union is therefore a large factor in the effect of growth and vigor in an ornament, and teachers should make its importance and beauty very well known to pupils. The illustration shows on

the right a line uniting tangentially with the vertical, thus showing tangential or "touching" union; on the left, a line which, if continued, would cut the vertical, thus showing secant or "cutting" union.

Symmetry. — The laws of decorative design, as has been said, are derived from a study of nature and of geometry, and underlie all good historic ornament. Thus the idea of symmetry is found constantly suggested and approached in nature, but never actually displayed; in geometry it is perfected. From the suggestions of nature and the idealizations of geometry, the element of symmetry in decorative design has been developed.

Bilateral Unit. — A decorative design is planned to fill the space it is to occupy; therefore, bilateral units vary in proportion according to the place in which they are to be used. But there are certain general ideas of decorative treatment which pertain to all the variants. These ideas can best be developed by the use of the general type of the bilateral unit, which has come to be known as the kite-shaped unit, as seen in Fig. 2. This has always been a great favorite, as it seems to meet an innate desire for symmetry, proportion, and variety. It is very interesting for pupils to discover this type in examples of ornament of various styles. The lotus palmette is of this type.

Symmetry is produced by repetition on an axis, called the **axis of symmetry.** Proportion in art is the pleasing relation of unequal parts. The kite-shaped unit is susceptible of innumerable changes of outline and proportion, while still retaining its chief characteristic — unequal tapering at the two ends of the axis — through all the changes. The greatest width of the kite-shaped unit may be at any point in the axis outside the centre; or, in other words, considering the figure in its normal position, the greatest width may be above or below the centre, but not at the centre of the axis. Its normal position is with the axis vertical.

Modifications. — The line of illustrations below shows some of the simple modifications that may be made in the kite-shaped unit by changing a part or the whole of the outline from straight to curved lines. Still further modifications are introduced to give stability, strength, and variety.

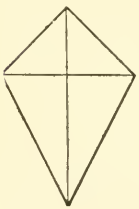


FIG. 1.

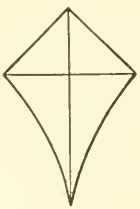


FIG. 2.

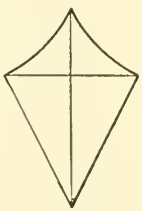


FIG. 3.

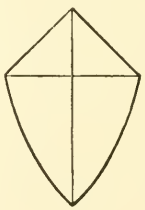


FIG. 4.

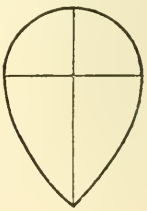


FIG 5.

Stability. — Study tree form, and see how stability is there secured. Sketch a tree roughly in mere outline; note the general shape obtained — a strong trunk, broad branching at the top, an expansion at the roots.

Study now Figs. 7 to 10, and note the expansion at the root or base, which gives the appearance of stability to the unit. A unit with insufficient expansion at the base is weak. This is, then, an important modification.

Strength. — While considering expansion at the base, provision must also be made for the strength of the unit, which can be best attained by sufficient width of stem or trunk. If the trunk or stem is made too slender, the unit becomes painfully weak. In a tree, the trunk is generally slender in proportion to the width of the branching, but in a tree much strength comes from the growing life. In a figure, strength must be expressed in the trunk or stem by a greater proportional width.

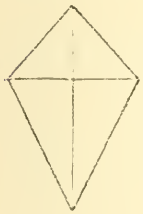


Fig. 6.

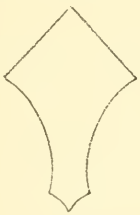


Fig. 7.

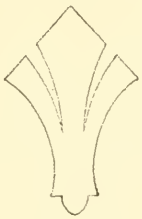


Fig. 8.

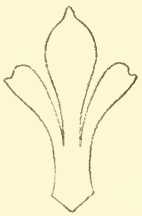


Fig. 9.

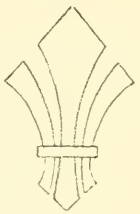


Fig. 10.

Variety. — The unit may be modified by division, so as to secure greater variety; this division may be partial, as in Figs. 8 and 9, or entire, as in Fig. 10. In the use of division, care must be taken not to impair the strength of the unit. The divisions of Fig. 8, a partially divided figure, are held together by the strong undivided stem, as the trunk of a tree holds the branches together. Draw this on the board, and lead pupils to see that if the divisions are carried too low, there will be an apparent tendency to split, and thus the strength of the unit will be lost.

Pay special attention to the proportional width of parts in these units, the central part being broader than those at the sides. Division of the unit introduces a very beautiful phase of proportion — proportional parts. The beauty of proportional parts may be illustrated not only by the study of the figure, but also by the study of nature. Three and five lobed leaves show this regard for proportional parts. Note also that these parts seem to grow from the stem, and that their curves, if continued, would pass within the stem. This is an important point.

If the unit is wholly divided, as in Fig. 10, stability may be obtained by holding the parts together by a band. Care must be used, however, to place the band at the narrowest part of the unit, where it would really be of use. Show

this by drawing on the board. The good effect of fine curvature and pleasing proportion may be largely destroyed by placing the band above or below the narrowest part of the unit. The effect given is that of insecure holding, which detracts greatly from the repose necessary in ornament. Division may also be used in a moderate degree to give variety to the base.

How to Judge a Unit. — It is not an easy matter for beginners to draw simple and beautiful units, and teachers are sometimes at a loss to know how to help their pupils. It is necessary first to consider the characteristics of a good unit. A unit complete in itself should possess symmetry, proportion, contrast, breadth, stability, and repose, and should be judged according to its possession or lack of these characteristics. In judging units, the following questions will be helpful: —

Symmetry. — Is the unit symmetric, or is it one-sided? Pupils should be led to see the beauty of symmetry, by which one part is the reflex of the other, and therefore in harmony with it.

Proportion. — Is the proportion of the unit agreeable as to general dimensions? The effect will not be good if the two dimensions are either very nearly alike or widely different. If the unit is partially divided, what is the relative proportion of its parts? There should be a moderate inequality between the central part and those at the side, the central part being larger than the other two. The proportion of each part should be that of slenderness, rather than of breadth. If the parts are made too wide, the unit, as a whole, will lack elegance of proportion.

Contrast. — Is there a pleasing contrast of straight and curved lines, or of inner and outer curves, or of curves and points? There is often a monotony of outline in a unit, produced by several curves of the same sort, or by continuous curves of no very strong character.

Breadth. — Is the unit simple? Simplicity is a great beauty in decoration. If the unit is cut up into many petty parts, this beauty is lost.

Stability. — Is the stem of the unit broad enough to be strong? Does the unit expand at the base? If partially divided, would the curves of each part, if extended downward, pass within the stem, or would they cut through it? To be true to the laws of growth, they should pass within the stem. Notice whether the curves which divide the unit into three parts would, if continued downward, cross the outer lines of the stem. If wholly divided and held by a band, is the band so placed that it can perform its office?

Repose. — Is there anything startling about the unit? Has it many sharp points? or unusual curves? If so, it cannot be restful. Are the curves easy, flowing, and graceful? The higher qualities of repose are obtained through symmetry, proportion, breadth, and stability.

"Teach them the music fine
In the curve of a perfect line."

Rosette. — A rosette may or may not have an enclosing figure. When it is desired for any reason to call particular attention to the shape of a rosette, or to indicate more clearly its fitness to occupy a certain place, an enclosing figure is added to emphasize the shape. A rosette is usually made up of symmetric units, which occupy equal *fields*. A field is that part of the ground of a design that a unit is to occupy. If the rosette is from a flower form the number of units is determined by the petals in the flower chosen. To aid in preserving the symmetry and order of the rosette, the axis of the units should be drawn. In a circular figure, the radii of the circle will serve as axes of the units.

The unit, however, must not touch the enclosing circle, for that would give a crowded look; a feeling of restriction and constriction would ensue, and the repose of the figure would be lost. A space, therefore, should be left between the ornament or filling and the enclosing figure; at least two-thirds of the ground should be filled. A skilful teacher will lead pupils to this study of space relations.

Study of Nature. — Study a flower, observe its general outline, the arrangement about the centre, the radiating petals, their graceful shape, the way in which they are held at the centre, the stamens and pistils filling the centre. Try to express this in a broad, simple way, by drawing with an even line. You will have a rosette with regular, radiating units of beautiful outline, and a strong, simple centre. The details of stamens and pistils are too minute for representation here — the result would be only dots, which would seem characterless. The centre of the rosette, holding the units together, is simply a reflex in the drawing of that mysterious power of life that sends out the flower and holds the petals with a circling hand. This is a delightful exercise, and is always enjoyed by pupils, as it is not beyond their comprehension, and it gives them an opportunity to discover the elements of beauty; and so insight grows.

Besides the wonderful beauty of appearance and the marvellous physical structure of a flower, there lies within it a perfect manifestation of order, of symmetry, of proportion, of unity, of æsthetic beauty. The æsthetic is the highest type of the ideal. In studying a flower for a motive of ornament, the attempt must be, through the study of the flower, to reach its ideal.

A Surface Covering. — Probably the idea of designs for surface covering arose from the patterns brought out in weaving. Thus from the beginning order was suggested; and still, order resulting from a geometric plan is one of the essentials in a surface covering.

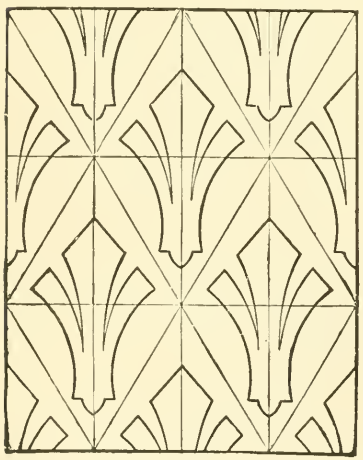
Walter Crane, in speaking of designs for surface coverings, says, "Most of us who have given thought to the subject feel that a design must be constructed on some systematic plan, if not absolutely controlled by a geometric basis."

The first step then in the actual drawing of a design must be a plan on which to lay it out. It must be determined also whether it is to be used horizontally or vertically. A bilateral unit is always suitable for a vertical surface covering. A rosette is suitable for either a vertical or a horizontal surface covering.

Have some examples of simple surface covering in textiles or wall-paper, and let pupils discover the geometric arrangement or plan that underlies the placing of the figures. Sometimes this plan is easily traced, and sometimes it is apparently hidden; but a little search will always find it. The usual plans of surface coverings are based on squares, rhombuses, or hexagons repeated.

In some of these designs, the geometric plan shown by light lines in Fig. 5, Plate IV, and in the illustration below, *does not appear* in the finished work; only the decorative figures remain. In others, as in Fig. 3, the geometric plan is left to form part of the design. Plate IV gives various examples of surface coverings which plainly show geometric plan. Fig. 1 is Japanese; Fig. 2 is Persian; Figs. 3 and 4 are Egyptian; Figs. 5 and 6 are modern, and were taken from Lewis Day's *Anatomy of Pattern*.

When in a surface design the units only appear, the geometric laying out of the space having been erased, the arrangement is technically known as *powdering*. Figs. 2, 4, 5, and 6, Plate IV, are examples of powdering.



Distribution over the surface is now to be considered. Care should be taken that the unit be not too large for the allotted space, so that the design shall not look crowded; and also that the units shall not be too small, so that the unit will not seem scattered and lost. As a general rule, about two-thirds of the surface should be covered in a surface covering. The units in a surface covering taken collectively are known as the *filling;* the space uncovered is known as the *ground* or field. The proportion of the *filling* to the *ground* should then be about as two to three.

Decorative Treatment. — The decorative treatment of a natural form occupies a middle ground between a picture and a **decorative design**. In all three, the composition of line, mass, and color is a decided element. In a *decorative design* the composition has a geometric basis; while in a picture and in a *decorative treat-*

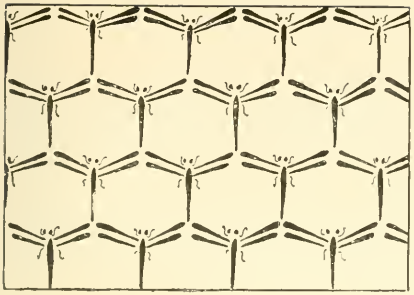


FIG. 1.

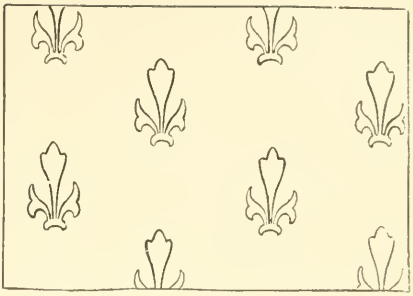


FIG. 2.

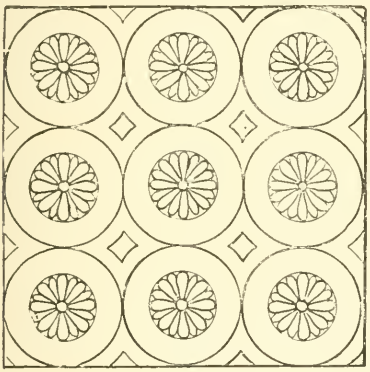


FIG. 3

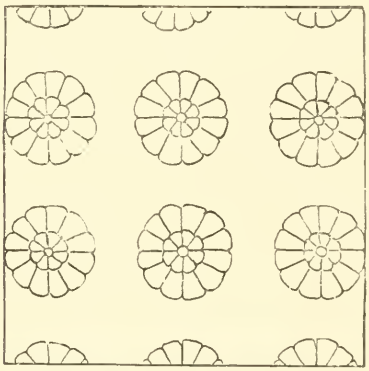


FIG. 4.

FIG. 5.

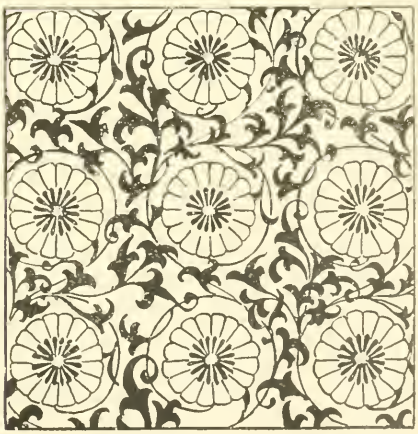


FIG. 6.

A Page of Designs for Surface Covering.

ment, the composition depends on agreeable contrasts of line, mass, and space, with more regard to pictorial effect than to geometric order. In a picture, the representation of the object in light and shade, with all the harmonizing accessories of composition of line, light, and dark, etc., is the main thing. In a *decorative treatment*, the composition of line, mass, and color is the chief element, while the representation is carefully kept. The drawing is true and spirited, but without the pictorial element and the modeling given by light and shade. The contrasts are not of light and shade, but of light and dark, or of light, dark, and middle tone, as will be seen in Plate V. Everything is kept in flat effect, whether the work be in black and white or in color.

Mr. La Farge says, "We compose when we select." The selection of a suitable motive, and of a beautiful aspect of this motive, is one of the elements of composition for decorative treatment. The selection of a well-proportioned enclosing figure is of importance, as well as the disposition of the motive in the figure. The relation of the open spaces to each other should be studied, as well as the beauty, contrast, and harmony of line, mass, and color, in the motive itself. Decorative treatment is used more for single effects than for repetition.

Decorative Design. — The purpose of *decorative design*, however, is mainly to produce subordinate effects for repetition; hence, the mode of composition differs greatly from that for decorative treatment. In decorative design, conventionalization and a geometric plan subordinate the pictorial, and tend to make the decoration quiet, restful, and undemonstrative. Decoration should attract by its harmony, repose, and unobtrusiveness. It should surround one with companionship of thought as expressed in the beautiful without any element of domination.

Method of Study. — For a *decorative treatment* seek a beautiful motive and the most beautiful aspect of that motive; if the enclosing figure is not fixed, look for one beautiful in itself and suited to the motive; consider how the motive may be best arranged to make the contrasts with the open spaces agreeable; try to express the life and grace of the motive in the lines, masses, or colors; but keep all the treatment flat, without expression of light and shade. Study, however, the relation of light and dark. If a certain fixed space is to receive a decorative treatment, seek for a motive fitted to the space, selecting its most beautiful aspect.

In *decorative design*, however, consider first the mode of repetition, whether for a unit, a centre, a border, or a surface covering. Select a beautiful motive, and consider the geometric plan for the design. Draw the lines and masses which represent the ideal of the motive, rejecting all pictorial effects.

In decorative treatment the motive is the main feature; in decorative design the motive is used to enhance the beauty of geometric order and arrangement.

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Mode of Expression. — This may be with pencil or brush, in outline, light and dark, or color.

In Representation, a drawing is intended to represent the appearance of an object, or group of objects, and therefore to express not only the appearance as to mere outline, but also as to distance, as to direction of light, and as to relative importance of parts. It is in Representation, therefore, that what is known as "rendering" is used, giving more emphasis to some parts, and less to others, according to their light, their distance, and their value, by lines varying in thickness and in shade.

In Decoration the purpose is different. No effect of light, shade, distance, or value is desirable in flat decoration. A decorative figure should be drawn in the simplest possible way. It should be drawn with intelligence, with strength, with purpose, with firmness. The line should be open in texture, of an even gray color, and of an even width. Venation may be expressed (it should be sparingly, however) by a line tapering in width. Unevenness of line in decorative outline detracts from repose.

Accent in line — that is, the line rendered as it would be in pictorial drawing — is out of place in flat decoration. The line may sometimes be irregular, as in the drawing of historic ornament, but it should retain the effect of flatness.

Construction; or, Drawing as Applied in Conveying Ideas of the Facts of Objects.

Construction deals with the facts of form, and shows the use which is made of the drawing of these facts in the world of industry. Its importance, both educationally and practically, cannot be too strongly emphasized.

Working-Drawings. — *Construction* as used in graphic study is the science and art of making drawings which give the facts of size and structure of objects and from which objects may be constructed. These are called working-drawings, and are necessary to guide the workman in nearly every branch of manufacture.

Practical Value. — The practical value of constructive drawing will be more and more recognized as knowledge grows of the way in which ideas of form, that is to say, constructive designs, are expressed so as to be carried out in manufacture and industry. Every detail of building construction, from the stone foundation and the beams to the finished exterior views of the house, or church, or cathedral, has first to be imagined, and then shown by working-drawings; from these drawings the builders work. Every new invention, from the simplest detail in machinery to

From Japanese Drawings.

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a great engine as a whole, must not only be thought out before it can be made practical, but it must also be expressed and be made intelligible through working-drawings. It is through working-drawings that every new object manufactured is made possible, is materialized, so to speak. Designs for all landscape gardening and outdoor improvements — roads, parks, drives, etc. — must be expressed in working-drawings, that they may be carried out by workmen. The great works of civil and mining engineering depend upon working-drawings for their ultimation. There is no walk in life in which a knowledge of the methods of expression underlying working-drawings and the ability to interpret them are not of service.

Creative Imagination. — But beyond the practical benefits arising from a knowledge of constructive drawing there lies the great educational value in the subject of Construction well presented. It calls for most accurate observation, most careful consideration of the relation of parts and of form values, of the adaptation of form to purpose, of agreeableness and beauty of form — all in the service of the creative imagination. The principles which govern the expression of thought in the subject of Construction are fixed, and take their place among the exact sciences. From these considerations, the value of construction will be seen, as a subject of study, not only for the few who wish to pursue its special lines, but also for all students.

A Working-Drawing. — A working-drawing is a drawing which gives all the facts of form, size, and structure of an object. Its purpose is to show a workman with accuracy all the facts of an object which is to be made. This object may be one already made or it may exist only in the brain of the inventor or designer.

A working-drawing is, therefore, composed of as many different geometric views of an object as are necessary to the complete understanding of the object.

A geometric view shows an object under the simplest possible conditions; that is, as seen with but two dimensions. For such a view, the object is supposed to be placed not only directly in front of the eye, but as though each individual part was directly in front of the eye.

The different views required in a working-drawing are named from the part represented in the view; thus the front view represents the view obtained by looking directly at the front of the object; the top view represents the view obtained by looking directly down upon the object, and so on with the other views.

It has been agreed by long custom to represent certain things in working-drawings by certain kinds of lines; agreements of this sort have come to be known as "conventions." The "conventions" of Construction to be noted at this time are few. The various kinds of lines used are centre lines, working lines, visible lines, invisible lines.

In lead-pencil drawing, the centre line — that is, the line for placing the views — is usually made a short-and-long-dash line - —— - —— - ——, the long dashes being made longer than those for "invisible lines." Working lines, by means of which distances are

transferred from one view to another, are frequently made short-dash lines, but they may be made light lines. Working lines, however, are used only in elementary practice.

All visible edges and outlines — that is, edges and outlines which are actually seen in the view to be drawn — are represented by clear, full lines, called "visible lines," perfectly even and uniform, not too strong nor yet too fine. "Invisible lines" representing edges or outlines which are known to exist in the object, but which are hidden in the particular view which is being drawn, are always made long-dash lines — — — —, and should be of the same strength as the full lines. By means of these conventions the purpose of these various lines is seen at a glance.

Dimension lines figured show the size of the object. They are limited by arrowheads; they may be either short-dash lines, as illustrated on page 41, or they may be long fine lines <——————0′—6″ ———> broken by the insertion of the figuring necessary to show the size.

In making a working-drawing it is frequently necessary to make the drawing smaller than the object. In order to keep the proportions of the object in the drawing, the method of "drawing to scale" has been adopted. If the scale is decided to be $\frac{1}{2}''$ to 1′–0″, then for every foot in the object, half an inch is laid off on the drawing. The drawing is then marked: Scale $\frac{1}{2}''$ to 1′–0″ or Scale $\frac{1}{2}'' = 1'–0''$.

It is necessary to multiply the views as the details of the object increase and as the construction becomes more complicated; but it is not often in simple objects that more than three outside views are required. Yet there are six outside views of any rectangular object: top view; bottom view; front view, sometimes called upright view, face view or elevation; back view; left side, or end view; right side, or end view. In addition to these, there may be as many sectional views as are required for a clear understanding of the internal construction and details. A sectional view is a representation of an object, which gives two dimensions and details of the object, as seen when it is cut through horizontally, or vertically, or obliquely, thus showing the construction of the interior.

Illustrations of working-drawings of simple objects will be found on page 41. Fig. 1 shows two views of a hoop; Fig. 2, two views of a slate; Fig. 3, three views of a square frame, square in section; Fig. 4, three views of a circular frame, square in section; Fig. 5, three views of a circular frame, circular in section; Fig. 6, two views of a screw; Fig. 7, four views of a hollow cylinder, closed at the upper end. It will be seen that in Figs. 3, 4, 5, and 7 sectional views are necessary to show the facts of form of the objects.

The "conventions" mentioned above — centre lines, visible lines, invisible lines — are illustrated in these working-drawings. It will be noticed that these drawings give the facts of size as well as of form. Working lines are illustrated in the Drawing Books and Manuals for the Fourth to the Eighth years.

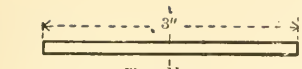
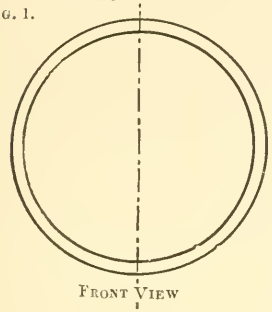


Fig. 1.



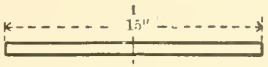
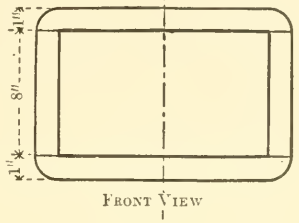
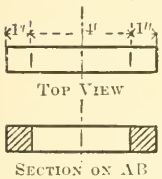
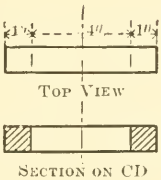


Fig. 2.







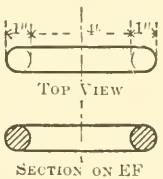


Fig. 3.

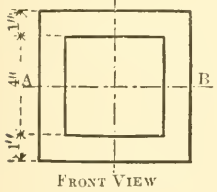


Fig. 4.

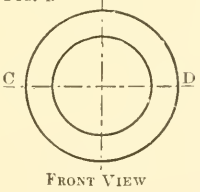
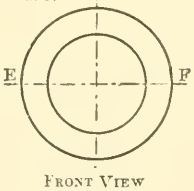


Fig. 5.



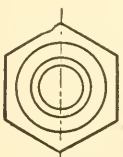
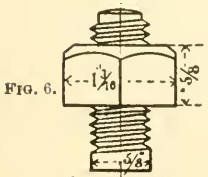


Fig. 6.



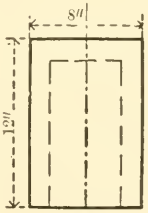
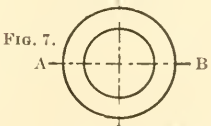
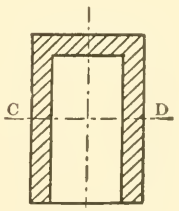
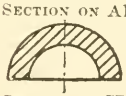


Fig. 7.







Section on CD
Bottom View

Dimensions. — Clear ideas of dimensions are necessary in the subject of Construction. Dimension is extent in any one direction.

Dimension in only one direction, as of a line, is known as length.

When there are two dimensions, as of any surface, the two dimensions are called length and breadth.

When there are three dimensions, as of a solid, the longest dimension is known as length, the next is known as breadth, and the shortest is known as thickness. Thickness, however, always expresses solidity, and is never used to express the third dimension of a hollow object.

The terms just spoken of are applied to solids and objects without reference to position.

Let a solid now be considered with regard to both dimension and position. It has three dimensions, as before, but the dimensions now have definite direction, — it has one vertical dimension and two horizontal dimensions. The vertical dimension is known as height; and the horizontal dimensions are designated by width: 1, width from left to right; 2, width from back to front.

When the vertical dimension is less than the shorter of the horizontal dimensions, it is sometimes known as thickness. It is better, however, as a general rule, to adhere to the terms height, width from left to right, width from back to front, in speaking of objects in a definite position.

Pupils may be called on to measure the length of certain lines in the room, whether vertical, horizontal, or oblique. Then they may measure faces, — so many inches one way, so many inches the other way. Then they may measure solids, — so many inches one way, so many inches another way, so many inches another way; thus gaining the idea of measurements in different directions, and from that the idea of extension or dimension in different directions.

In a similar way the idea of height, of width from left to right, and of width from back to front, as dimensions in different directions, may be developed, and probably the pupils can be led to express these by the proper terms.

Pupils will now be ready to see that in a geometric view but two dimensions are represented, and that in order to represent three dimensions of an object two geometric views are necessary.

Views of Solids. — When a solid is simple and regular, the facts of its form can be shown in two views, — the front and top views. These views should be placed in the same relation to each other that they have in the object; that is to say, the top view should be placed above the front view. The top and front views of twelve solids[1]

[1] A full statement of their characteristics and applications will be found at the end of this Manual.

are here illustrated — the top and front views of the sphere, Fig. 1, — the cube, Fig. 2, — the cylinder, Fig. 3, — the hemisphere, Fig. 4, — the square prism, Fig. 5, — the right-angled triangular prism, Fig. 6, — the top and front views of the ellipsoid, Fig. 7, — the ovoid, Fig. 8, — the equilateral triangular prism facing, Fig. 9, — the same with a long edge toward you, Fig. 10, — the cone, Fig. 11, — the pyramid, Fig. 12, — the vase form, Fig. 13, are seen.

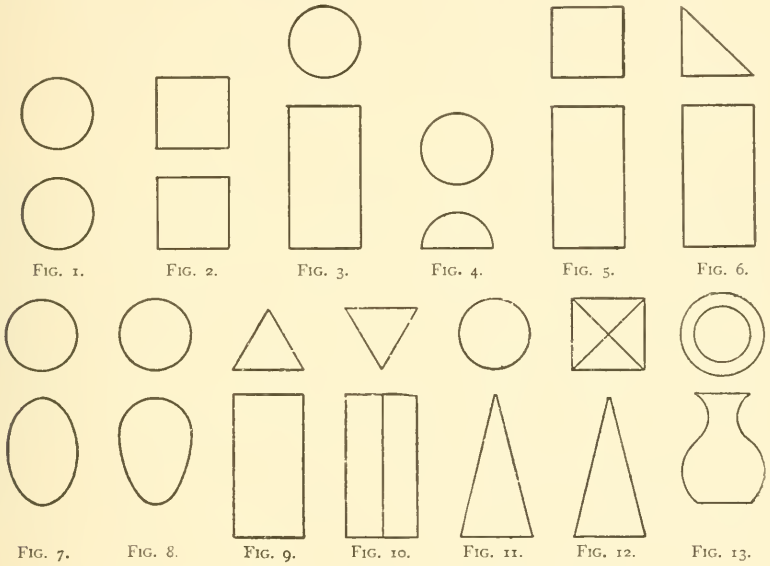


FIG. 1. FIG. 2. FIG. 3. FIG. 4. FIG. 5. FIG. 6.

FIG. 7. FIG. 8. FIG. 9. FIG. 10. FIG. 11. FIG. 12. FIG. 13.

More than Two Views. — It is frequently desirable to have more than two views. In this connection, the triangular prisms show some interesting facts, as will be seen by the study of their views. Take first the right-angled triangular prism in a vertical position. This prism has two right-angled triangular faces, two narrow oblong faces, and a broad oblong face. If it is placed vertically, with one narrow oblong face facing you and the other on the left side, its top, front, bottom, and right-side views will be as in Fig. 1. As, in the solid in this position, the vertex of each triangular face points away from the front face, so the vertexes of the triangles in the top view and in the bottom view point away from the front view.

The side view of a solid shows its width directly from back to front, therefore the left and right side views of a solid must be of the same width, and the right-side view of the prism in this position must be a narrow oblong, no wider than the left face, although, in looking at the right-side view, the broader oblong face is in sight.

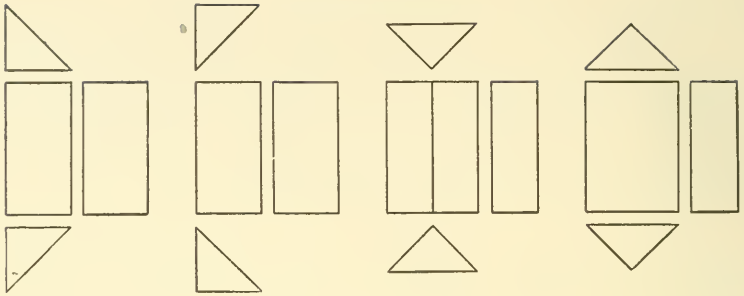


FIG. 1. FIG. 2. FIG. 3. FIG. 4.

If the prism is placed so that one narrow oblong face is at the left and the other is at the back, its views will be as in Fig. 2. If it is placed with the broad oblong face at the back, its views will be as in Fig. 3. The right-side view cannot be wider than the width of the solid from back to front, as seen in the top view. If the prism is placed with the broad oblong face facing, its views will be as in Fig. 4. These views will be readily understood if they are studied from the solid.

The study of the equi. tri. prism placed vertically and horizontally as Figs. 9 and 10, page 43, would also show facts of a similar nature. The left end, front and top views of the horizontal equi. tri. prism, in various positions, are seen in the illustrations below. In Fig. 1, the prism rests on an oblong face; the front view is not as high as the front *face* would measure, for the front view cannot be higher than the end view. The width of the top view, from back to front, equals the width of the left end. Similar facts will be observed in Figs. 2 and 3. In Fig. 3, the prism is supposed to rest on a long edge, with an oblong face facing you.

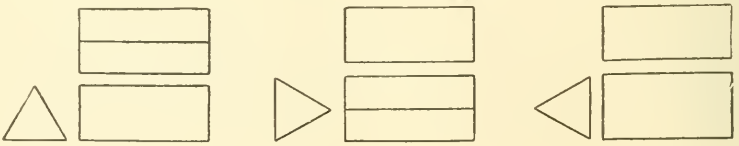
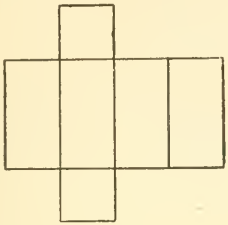


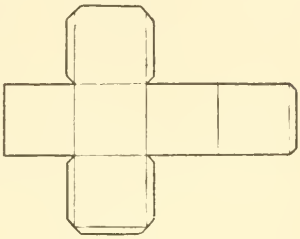
FIG. 1. FIG. 2. FIG. 3.

Patterns. — A pattern is anything cut or drawn or formed to correspond to an object to be made, and serving as a guide for determining its exact shape or form and its dimensions.

A flat pattern of a solid is made by what is called the development of the surface of the solid. The surface is, as it were, unfolded and spread out flat, thus making a pattern, which, when folded, will show the form of the solid. The devel-

opment of the surface of the square prism is shown below; also the pattern of a cube with laps for pasting. The subject of patterns and development is carried in this Course as far as the development of a four-part elbow.

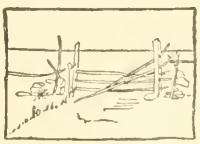




Manual Training. — Both educators and practical men are now seeking the introduction of manual training into regular school work. Such training will, however, fall short of the desired result, both educational and practical, unless pursued in connection with regular, systematic, thoughtful work in Form Study and Drawing, as form is the basis of all work in manual training. By means of pattern sheets, definite exercises in regular sequence, and in immediate connection with the Form and Drawing exercises, are provided. Making objects from the patterns also furnishes objects for study, as well as opportunity for care and skill in manual work. The pattern sheets are provided so that accurate models may be made. Where instruments are provided for children, it will be much better for them to lay out and draw their own patterns, instead of using the printed patterns.

Composition.

Composition, as the word is used in art, is a general term covering the individual worker's choice and arrangement of forms and colors, lines and spaces, in order to perfectly and beautifully express his idea and carry out his plan. He is continually collecting material for this use, through his studies of nature and of the art productions of his fellow-workers. Through such studies he fills his mind with conceptions of beautiful forms and colors; he develops judgment regarding the appropriateness of certain forms, colors, plans, and arrangements to certain ideas of use and beauty; and he cultivates his power of idealizing familiar things and their relations to each other.

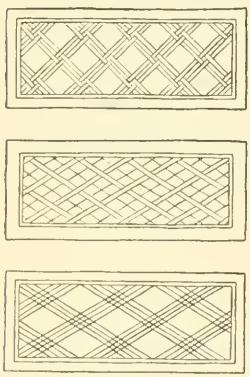


It is when he himself composes a bit of Representation or Decoration or Construction that he begins to make truly creative use of what he has acquired in other lines of his art-study.

Composition, in a word, stands for individuality in art. Composition as a feature of art instruction stands for the development of individual creative power in the art activities.

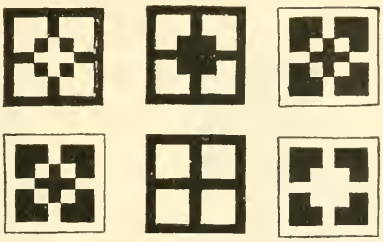
A study of good composition already existing in the various departments of art shows that there are a few great, underlying principles on which the best workers of different times and places have consciously or unconsciously agreed. These principles seem to be fundamental in art just as certain other principles are fundamental in nature. In nature-study children are led to see how certain principles or laws keep the natural world in beautiful order, and how a man's wise utilization of these laws in his own work makes that work effective. So in art-study children should be led to see how certain principles underlie all good composition, and to utilize these same principles in their own creative work.

Good composition results from a harmonious arrangement or grouping of parts — each part being subordinate to the whole and in a pleasing relation to the other parts — so that the whole is beautiful. While this work in its result is original and individual, there is of necessity an orderly procedure underlying every composition. The geometric plan is first determined. In pictorial composition, the geometric plan is simply the shape of the space to be filled — some plane geometric figure; in decorative composition the geometric plan may be merely the shape of the space to be filled, it may require in addition the geometric laying out of the repeats, and it may require also the geometric symmetry of the repeats themselves; in constructive composition, either industrial or architectural, the third dimension may be involved, and solid as well as plane geometry may give the geometric plan.



Having the geometric plan determined and having decided on the motive, — whether lines, spaces, plant, landscape, figure, etc., — the great effort, the art effort, is to so present that motive that the general effect will be harmonious, that its lines shall contrast agreeably, and that its spaces shall bear pleasing relations. To secure this the student, bearing in mind that harmonious **proportion** of the parts to each other and to the whole is secured through the simple laws of **principality, opposition,** and **balance,** works out this problem in various ways striving to show his own conception of beauty. By these efforts and by the study of fine works of art, he learns

the need of *breadth*, *simplicity*, and *repose*. If he is working in decorative composition, he considers *symmetry*, *rhythm*, and *order*.



Principality requires that one part be more important and the others subordinate, hence contrast of dimension or of value ensues.

Opposition requires that there be a variation or contrast in direction or directness of line and in shape.

Balance requires that there be such a mediation or reconciliation of these contrasts that the whole effect will be harmonious.

All nations have shown their ideas of composition in their paintings, their sculpture, their decoration, and their architecture. To the Greeks we owe that magnificent example of architectural composition, the Parthenon. Their feeling for proportion, for space and form relations, has never been surpassed. From the great masters of pictorial art of the fifteenth and sixteenth centuries, as well as from the builders of the Romanesque, Gothic, and Renaissance periods, we receive lessons in composition.

"In my experience, art instruction must begin by awakening the perceptions of beauty, by causing an exercise of choice and judgment, by the effort to originate something that is fine, — that reflects the personal thought or emotion of the student. That is the purpose of the simple problems in elementary line. The pupil makes several designs, chooses the best, compares them with similar things in the art of the world, and is helped to perceive the style and distinction of the really fine things. By continually exercising his judgment and personal feeling, he gains creative ability; and when he desires to express his thoughts by representing nature, he has acquired a language in which to do it, and his eagerness to do it will lead him to draw with enthusiasm. This simple beginning underlies Painting, Sculpture, Architecture, and Decoration.

"From the beginning this thought is emphasized, viz.: that neither applied design nor representation of nature can be called *Art* unless the fundamental ideas of Proportion, Opposition, Principality, and others have been considered and appreciated.

"The study of composition means an art education for the entire people, for every

child can be taught to compose — that is, to know and feel beauty and to produce it in simple ways." — ARTHUR W. DOW.

"Flowers,[1] by their great variety of line and proportion, are particularly valuable, as well as convenient, subjects for elementary composition.

"Their forms and colors have furnished themes for painters and sculptors since the beginning of Art, and the treatment has ranged from abstractions to extreme realism: from the refinements of lotus-derived friezes to the poppy and rose wall-papers of the present time.

"In flower composition as here suggested, there is no intention of making a design to *apply* to anything as decoration, hence there need be no questions as to the amount of nature's truth to be introduced. The flower may be rendered realistically, as in some Japanese design, or reduced to an abstract suggestion, as in the Greek, without in the least affecting the purpose in view, viz., the setting of its lines into a space in such a way that *beauty* shall result — in other words, making it serve as a subject for a composition exercise.

"It is essential that the space should be *cut* by the *main lines;* a small spray in the middle of a big oblong, or disconnected groups of flowers, cannot be called compositions; all the lines and areas must be related to one another by connections and placing so as to form a beautiful whole.

"Not a picture of a flower is sought — that can be left to the botanist — but rather an irregular pattern of lines and spaces, something far beyond the mere drawing of a flower from nature and laying an oblong over it, or *vice versa*.

"The instructor draws a flower in large, firm outlines on the blackboard, avoiding confusing detail, and giving the character as simply as possible. The pupil first copies the instructor's drawing, then he decides upon the shape into which to compose this subject — a square or rectangle will be best for the beginner. He makes several trial arrangements roughly, with pencil or charcoal. Having chosen the best of these, he improves and refines

[1] From a book on "Composition," now in preparation, by Arthur W. Dow. The illustrations given in this section are from the work of Mr. Dow's pupils at Pratt Institute, Brooklyn, N.Y. In The Prang Elementary Course of Art Instruction, Drawing-Book 7, there is a full-page illustration (page 15) of Mr. Dow's work in Flower Composition.

them, first on his trial paper, and later by tracing with brush and ink on thin Japanese paper. Effort must be concentrated on the *arrangement*, not on botanical correctness.

"Many line compositions can be derived from one flower subject, but each of these can in turn be made the source of a great variety of designs by carrying the exercise farther into the field of Dark-and-Light. Paint certain of the areas black, and at once a whole new series suggests itself from a single line design. To the beauty of the line is added the beauty of opposing and intermingling masses of black and white.

"In this part of the work the *arrangement* of *shapes of light* with *shapes of dark* occupies the attention, rather than shading, or the rendering of shadows. Hence the flowers and leaves and stems, or parts of them, may be black or white, according to the feeling of the student.

"Let him choose, out of his several drawings, those which he considers best. The instructor can then criticise, pointing out the best and the worst, and explaining why they are so.

"A mere aimless or mechanical blackening of paper, without *effort to arrange*, will result in nothing of value."—ARTHUR W. DOW.

Mr. La Farge whose decorative work in Trinity Church, Boston,[1] whose stained-glass and whose general composition show the finest feeling for proportion and spacing, writes of art in "Letters from Japan": —

"I have far within me a belief that art is the love of certain balanced proportions and relations which the mind likes to discover and to bring out in what it deals with, be it thought or the actions of men, or the influences of nature, or the material things in which necessity makes it to work. I should then expand this idea until it stretched from the patterns of earliest pottery to the harmony of the lines of Homer. Then I should say that in our plastic arts the relations of lines and spaces are, in my belief, the first and earliest desires. And again I should have to say that, in my unexpressed faith, these needs are as

[1] The illustrative pages in Drawing-Book 12 of The Prang Elementary Course in Art Instruction give examples of his composition.

needs of the soul, and echoes of the laws of the universe, seen and unseen, reflections of the universal mathematics, cadences of the ancient music of the spheres.

"For I am forced to believe that there are laws for our eyes as well as for our ears, and that when, if ever, these shall have been deciphered, as has been the good fortune with music, then shall we find that all the best artists have carefully preserved their instinctive obedience to these, and have all cared together for this before all.

"For the arrangements of line and balances of spaces which meet these underlying needs are indeed the points through which we recognize the answer to our natural love and sensitiveness for order, and through this answer we feel, clearly or obscurely, the difference between what we call great men and what we call the average, whatever the personal charm may be.

"This is why we remember so easily the arrangement and composition of such a one whom we call a master — that is why the 'silhouette' of a Millet against the sky, why his placing of outlines within the rectangle of his picture, makes a different, a final, and decisive result, impressed strongly upon the memory which classifies it, when you compare it with the record of the same story, say, by Jules Breton. It is not the difference of the fact in nature, it is not that the latter artist is not in love with his subject, that he has not a poetic nature, that he is not simple, that he has not dignity, that he is not exquisite; it is that he has not found in nature of his own instinct the eternal mathematics which accompany facts of sight. For indeed, to use other words, in what does one differ from the other? The arrangement of the idea or subject may be the same, the costume, the landscape, the time of day, nay, the very person represented. But the Millet, if we take this instance, is framed within a larger line, its spaces are of greater or more subtle ponderation, its building together more architectural. That is to say, all its spaces are more surely related to *one another* and not only to the *story told* nor only to the *accidental occurrence* of the same. The eternal has been brought in to sustain the transient. . . .

"Yes, the mere direction or distance of a line by the variation of some fraction of an inch establishes this enormous superiority — a little more curve or less, a mere black or white or colored space of a certain proportion, a few darks or reds or blues. And now you will ask, Do you intend to state that decoration ——? To which I should say, I do not mean to leave my main path of principles to-day, and when I return we shall have time to discuss objections. Besides, 'I am not arguing; I am telling you.'" — JOHN LA FARGE.

The following books, treating of Composition, may be useful to teachers: —

Treatise on Composition. John Burnet.
Composition in Pictures. Susan Carter.
The Graphic Arts. P. G. Hamerton.
An Artist's Letter from Japan. Consideration on Painting. John La Farge.
The Genesis of Art Forms. George Lansing Raymond.
Practical Treatise on Composition. Harry Willson.
Composition. Arthur W. Dow.

Training of the Æsthetic Judgment.

A twofold purpose should run through all art training, namely, the development of both the creative and appreciative powers of the child. That training which aims purely to develop the child to his higher possibilities as an individual is insufficient. He needs as well that training which will make him a desirable and useful member of society.

While both lines of work minister to every activity in life, yet in a special sense the development of the creative powers prepares the child for his work as a producer — or brings him to his full powers as an individual.

The training of his appreciative powers, or æsthetic judgment, prepares him for his place as a consumer — or as a member of society.

Production and Consumption. — Every working member of society is in a sense a producer. He is a producer in a special sense who uses raw material of any kind for the manufacture of a product. While every person in this special sense is not a producer, all are consumers, and all are consumers of art products, or products resulting from the application of Art to Industry. The common environment of everyday life cannot be supplied without dependence upon this creative work of others. The element of design enters into everything made by man, and that design may be either good or bad ; therefore design as applied to construction, the making of things, affects the life of all more constantly and directly than the more purely imaginative arts of painting and sculpture.

All cannot as yet have paintings and statues in their houses, but all must have houses, furniture, and clothing. Fortunately, a chair or table may be truly a work of art, if it be designed according to correct principles. Fortunately, too, good design is not dependent upon expensive material. Objects may even be made beautiful for less than is often expended in making them ugly, for were the florid ornamentation so often seen omitted, this expense would be eliminated, and the object itself would be better in design. The responsibility for the quality of design rests primarily with the consumer. The producer — trained to his creative work, may desire to make truly artistic products, but he is not wise to manufacture what the public will not buy.

If the consumer insists upon furniture covered with meretricious ornament the producer is obliged to supply it, or go out of the business. In any broad sense the standard of production can be lifted only as the æsthetic judgment of society is developed to the point of demanding better things. The producer and consumer

are thus seen to be mutually dependent, for good design in the common surroundings of life, and the necessity for the development of the æsthetic judgment as an inherent part of art education, becomes apparent at once.

How may the Æsthetic Judgment be Trained? — Are there any principles which, when understood, will enable us to select with judgment, and to surround ourselves with beauty instead of ugliness, and thus raise the standard of production by the demand for good design? The selection of products has for the most part been determined by the mere personal preferences of the buyer, his standard of value being simply "I know what I like." For example, one is fond of roses, and influenced by this fact purchases a lamp-shade heavily decorated with naturalistic representations of his favorite flower.

Or, one admires color and sparkle, and selects a gilt chair for a reception room. The universal admiration for feminine beauty betrays another into buying a plate with a portrait of Madame Recamier painted upon it. In these instances the judgment fails to remind the purchaser that the roses obscure the light of the lamp, that the gilt chair is a palpable deception, and that it is unpleasant to spread food upon even a beautiful countenance. The fact that the schoolboy may prefer the history of "Sure Shot Sam" to "Hiawatha" does not prove that it is better literature. It is generally conceded that the choice of "rag-time" in preference to the "Fifth Symphony" is not evidence that it is better music. Neither is the mere personal preference for one design rather than another evidence that the design chosen is good. These illustrations lead us to an obvious principle. Personal choice is not the standard by which the quality of any art product may be determined. Or, stated positively — the æsthetic quality of a design must be determined by its relation to certain principles. These principles must be simple and of universal application, or they cannot be permanent measures of value. The value of a design is not determined by its historic accuracy of style. The styles of architecture and ornament are themselves measured by principles. As the principle of number antedates and underlies all systems of computation, — so the principles of design antedate and underlie the architectural orders and the grammar of ornament. These derive their authority only from their exposition of principles of design. To know how to select a good chair is to know the principles by which all constructive design must stand or fall. The principles involved in the design of a tea-cup govern the design of a cathedral. To help the child to see these principles expressed in simple objects is the best preparation for judgment of more complex forms later. As a generalization, the saying of William Morris, "Keep nothing in your house that you do not know to be useful or believe to be beautiful," is very

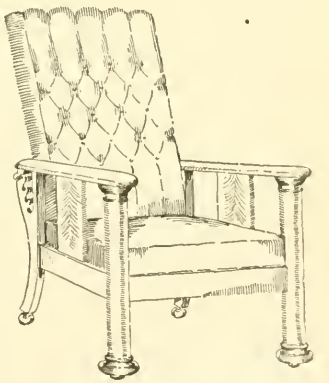
useful. Another valuable definition of more recent date is this: "Good design is the solution of the problem of utility in terms of beauty."

Every common object is made to serve some purpose. It should be made of the material and of the form best adapted to meet that purpose. This is an axiom, yet in it are involved the first two principles of good design.

1. Fitness of form to function.
2. Suitability of material.
3. Honesty of construction.

These three principles relate primarily to the use of the object, for no object can be truly beautiful without these qualifications. There are three other principles which concern more essentially the beauty of the object: they may be called Proportion, Beauty of Form, Beauty of Color. These six principles, however expressed, may be regarded as the golden rule of good design.

Fitness of Form to Function.—This may be illustrated in the schoolroom by any object at hand, or by reference to any common object at home. Take for example a chair. Consider first its purpose. All chairs are made to sit in. Yet one chair may be good in design for the very quality which makes another chair bad in design. The easy-chair should give a chance to recline, and should therefore have the back at quite an oblique angle, while a dining-room chair so constructed would be obviously unfit for its function. The Morris chair, designed by William Morris, is an example of excellent design in reference to all these principles. The back is adjustable by a simple device, and the chair can thus be made to suit the comfort of the user to an unusual degree. The free cushions allow perfect cleanliness. It meets with equal success the other demands of good design. The material is suited to the purpose; the wood is without ornament, its beauty being brought out by the finish of the natural wood itself. The construction is so simple and straightforward that a child may understand it. Here "the problem of utility" is indeed "solved in terms of beauty." Fitness of form to function may be safely considered the most inclusive and fundamental of all the elements of good design. In a sense it includes all the others. The illustration of the Morris chair is used because it embodies in a simple form all the principles mentioned. Fitness to



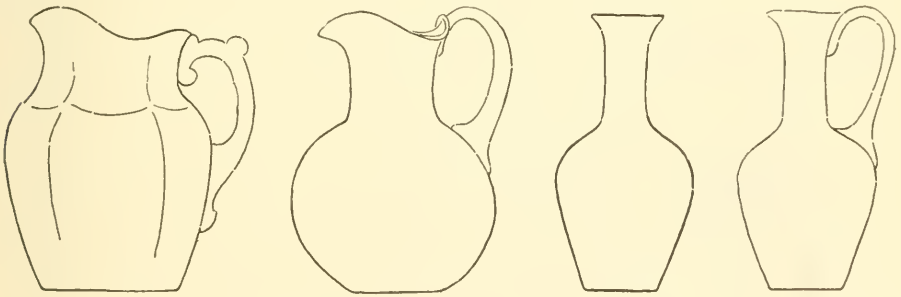
purpose would demand for the dining room a much more erect and formal chair. It should be designed with reference to the height of a dining room table. It should be light in order that it may be easily moved. It should be free from dust-collecting ornamentation and have a smooth surface to admit of perfect cleanliness. Apply these principles to some simple object like a milk pitcher. Fitness to purpose demands that it be light so it may be lifted easily. It must be of good shape so that the milk will pour without spilling. The handle must be large enough to take hold of, and the opening large enough to allow thorough cleaning. The first question to ask of any object in judging its design is, What is its purpose? Then, Does its form suit that purpose?

Suitability of Material. — This is really a corollary to the principles of fitness to purpose. Nothing can be truly fit for its use unless made of appropriate material. Illustrations of unsuitable material may be found in the plush covering of seats in railway or street cars, or in furniture for common use in the house. This material so holds dust and dirt that it is obviously unsanitary. Coverings of woven straw or of leather answer the needs of comfort and beauty quite as well, and have the quality of suitability. The paper lamp-shade may be beautiful in itself — the material is charming in texture and color — but its inflammable nature renders it unsuitable material for that purpose. So with the Japanese lantern — it answers every one of the requirements except that of suitability of material. The use of the candle renders it always dangerous. In form, proportion and color, it excels. In suitability, and therefore in fitness, it is deficient. Another illustration of material beautiful in itself, but bad through misuse, is the selection of silks and satins for children's dresses. The unsuitability is obvious. A white and gold book binding may be exquisite in design, beautiful intrinsically, but its tendency to show soil renders it unsuitable for any purpose which requires much handling. Suitability concerns itself largely with considerations of cleanliness, sanitation, and safety.

Honesty of Construction. — This means that the structure of the object shall honestly appear in its form. This is perhaps the most frequently violated of any of the principles of design. Negative illustrations rush at once to the mind. The folding-bed is a flagrant example of structural hypocrisy. Pretending to be a desk or a family organ it unblushingly confronts the undeceived beholder. Imitation of one material in another is always unsafe. "Tapestry effects" in wall-paper, "silkoline," or cotton made to look like silk, basket or lace patterns on china or pottery, wooden spindles made like twisted ropes, all such things violate the principle of honest construction. Houses are frequently seen made of brick with a

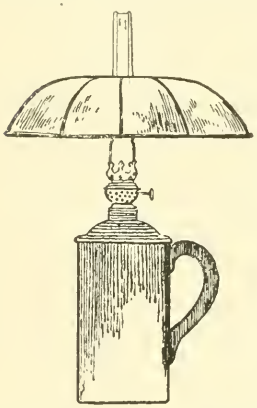
veneer of stone in front. A house built wholly of a cheaper material is better in design than a brick house which tries to pass itself off for stone. Terra-cotta ornament in buildings is treated like carved stone, and cast-iron window frames, used everywhere in commercial buildings, too often also masquerade as stone. A simple straightforward construction like that of the Morris chair is the only safe course. The moment we apologize for structure by concealing it we are violating an essential principle of design. This does not mean that seams should be outside and the structure of the object obtruded upon the eye. It merely means that there shall be no attempt to deceive the eye.

Proportion, Form, and Color. — These may be treated together, as it is difficult to separate them even for definition. Proportion and form are so dependent upon use that it is hardly possible to consider them abstractly. Proportion is the harmonious relation of parts to each other. All necessities may be met and the object still be unpleasing in proportion. Take, for instance, a pitcher. All the demands for use might be answered by the first form, but the eye is not pleased. All the requirements of use are equally well answered in the other designs, and they have also the elements of proportion and good form.



Proportion must be judged by use. A tall, slender vase for holding two or three roses is in beautiful proportion for that purpose, while for a pitcher for common use it would be bad. Harmonious relation of parts expressed with grace of line, make beauty inevitable. Color is the most distinguishable and separate of qualities. Beautiful color adds incalculably to the æsthetic value of any object. But of itself it is not enough to make an object beautiful. An illustration of this is the wonderful work of the Tiffany Company in the manufacture of their Favrile glass. Here color effects of surpassing beauty have been obtained. When this color is added to a beautiful form the effect is complete and satisfying, while the

color alone is not enough to redeem a clumsy form. An example of good design in every point is difficult to obtain, and it therefore becomes all the more essential to look for the good points in each object, though none will, perhaps, qualify in all. A chair that is good in construction may be covered with poor material. Let us be sure to recognize its positive quality. A dish is perhaps excellent in everything but decoration. By all means make the most of its good points, and in every illustration lead the children to emphasize the positive quality rather than the negative. Criticism by appreciation rather than depreciation is the law by which the æsthetic judgment may be trained on the optimistic and positive side. When negative illustration serves to point a positive principle it may perhaps be employed, but the emphasis should always be upon the points in which objects meet the requirements of good design. Let us look for fitness and beauty as exemplified in this design for a lamp.



Here, under Fitness of Purpose, we note that it is stable in form. It will not easily tip. The handle is firm, large enough, and well placed. The shade of bamboo and stretched silk is light in weight. It is suitable in material, since by its shape and mechanical arrangements the danger of burning is avoided. It is decorated enough to give charm without obscuring light, and the decoration is flat and appropriate. The construction honestly appears throughout. The proportion and form are simple and pleasing, and the color of the original enhances the effect of all the parts. The color of the base is echoed more delicately in the shade, bringing all the parts into unity. This seems to meet all the utilitarian requirements of a hand lamp, which must be carried from room to room, and to meet the requirements of beauty as well. Another shape might perhaps better answer other requirements, as for instance, a lamp for the dining table would necessarily be higher, in order to throw light down, while a reading lamp would not need to be so light in weight, the consideration of use being first in each case in determining the excellency of the design.

GENERAL DIRECTIONS.

Drawing.

Freedom of Movement. — The importance of freedom of movement in drawing cannot be overestimated. It produces lightness of touch, quickness in execution, begets confidence in one's ability to draw, and when acquired by a class of pupils, materially lessens the work of the teacher. Experience among thousands of pupils shows conclusively that too much stress cannot be laid on the need for the early development of freedom of movement. The ability to sketch rapidly and easily cannot be attained without it.

A set of drawing-books, finished as draughtsmen would finish them, rarely indicates the best teaching. It is of far more importance that the child should have opportunity to work first for freedom of movement rather than for straightness of line.

Position. — The children should sit on the left half of the seat facing the desk. They should sit erect, feet flat on the floor, the eyes never nearer the paper than is necessary for a clearer view of the lines. They should not bend forward unnecessarily, and should learn to work at a distance, as thus they can get a better idea of their work as a whole. In drawing at the blackboard, children should stand at arm's length from the board.

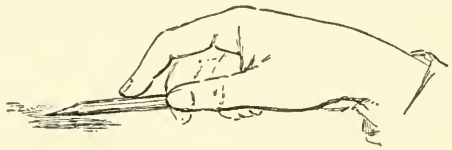
Pencil. — For general work the Prang school pencil S. M. is recommended. For work in light and shade, color, pencil-painting, and all methods of artistic rendering the S. M. is especially effective. Young children should be led to use such a pencil with restraint so as not to get extreme effects, that is, the rendering too heavy and black. The pencil should be used for drawing only. Short pencils should not be used.

For ordinary work, the pencil should be held lightly three or four inches from the point, so that it will have the support of the middle finger and be held by the thumb and forefinger, as shown in the illustration. Lead the pupils to attain this pencil-holding from a desire to draw freely and well.

The pupils should be led to see that frequent erasing injures the surface of the paper and the eraser is disastrous when applied to shade or shadow, therefore it is better that the pupils should draw at first with very light lines, correcting these if necessary by drawing other light lines over them. When a satisfactory outline (or blocking of the whole) is secured then the pupil may proceed to carry out the effect desired, any obtrusively incorrect lines being first taken out with an eraser.

For *pencil-painting* where the drawing is done in mass with broad intermingling strokes, the pencil should be held under the fingers as shown in the second illustration.

Practice Paper. — It is desirable that pupils should have some practice in free movement in connection with work in the drawing-book and some of the exercises call for quick sketches by the pupils in order to fix in the mind the purpose of an exercise, as in the pose or animal study, that the lines of action may be studied from life as preliminary to work in the drawing-book. For such purposes sheets of manila paper, six by nine inches, are desirable.[1] The sheets may be used on both sides for drawing. Provision should be made for at least twenty-five to thirty sheets for each pupil for use with one drawing-book. The teacher should guard against too much practice as preliminary to any exercises in the drawing-book lest the children lose interest and the spontaneity of their effort suffer. Still further, the work in the book should generally differ from that upon practice paper. For instance, if sketches have been made of clusters of grass on practice paper, it is well to use a different cluster for the drawing-book page.



Materials and Methods for Brush Work.

Ink. — For work in black and white common writing ink answers very well, though, of course, india-ink has more body and brilliancy.

India-ink is prepared in the most convenient form for use in bottles, and Higgins's Waterproof Liquid Ink (white label) is recommended.

India-ink of excellent quality can also be obtained in sticks directly from Japanese dealers at about fifteen cents a stick from two to three inches in length. When in this form it should be prepared for use by each child by rubbing an end with a little water in a small dish (individual butter-plate), adding more water drop by drop until there is enough for the lesson. The proper consistency can soon be estimated by trial and also the amount needed for the lesson. The ink is easily thinned by adding water and mixing it in the dish. The stick ink might be preferred in the upper grades as it gives a better effect than common writing ink. When the stick ink is used it should be carefully dried and wrapped in paper after using to prevent crumbling or cracking.

Brushes. — The quality or size of the brushes is not so important as the method of using them. The brush may be a flat bristle (for flat wash), or a Japanese pointed brush, or a camel's hair or sable brush of medium size. If a Japanese brush is used, it will be found that the bristles are partially held together near the base by a sort of glue. Care

[1] The paper is put up in packages of 100 sheets, and may be obtained of booksellers and of The Prang Educational Company.

should be taken not to remove this glue for outline work as its presence helps to give greater firmness to the brush; for general work in washes, its presence is not desirable. Brushes may be kept singly in the paint-box or together, using a box longer than the brushes so that the points may not be injured. Brushes should never be kept in water or put in the mouth. The paint-box and brushes should be put away clean. When put away for the summer it is well to add a piece of camphor.

Water-Colors. — Water-color paints are furnished to the schools in various forms. There are liquid paints in bottles, moist water-color paints in tubes, and paint-boxes with cakes of paint. Perhaps the most practical for general use in the public school is a paint-box with three colors of excellent quality.[1]

The scientific knowledge of color is of little or no value as a training of the color sense or æsthetic preception; but by mixing or combining (by juxtaposition) the three primary colors, red, yellow, and blue, the children may obtain much practical knowledge of pigments, their possibilities, and their limitations.

The paraphernalia for such work should be as simple as possible, so as to reduce the time required in handling it, and also the expense. One lesson a week, taking the time of two periods, is better than two shorter lessons. Large heavy cups or small bowls may be used for water — distributed by monitors and filled by the teacher from a long-nosed vessel, such as a coffee-pot. With care one supply of water will be sufficient for a lesson. The papers may be white or slightly tinted. An American drawing paper answers every purpose; the manila practice paper is good.

For all line work in ink or water-color the brush should be held as nearly vertical as possible, with the fingers slightly resting upon the paper and the whole arm moved instead of merely the fingers. Broad washes are obtained by charging the brush with considerable water and color and working with the side and not the point of the brush. To obtain control and power of expression, it is well to encourage even young children to use the brush in both ways.

How to Use the Brush. — For practice with the point of the brush it is well for children to reproduce borders which have been previously laid with sticks, or perhaps drawn, as this will not only keep a direct connection with other work, but will give excellent practice in handling. The constant and laborious drill which Japanese children are obliged to go through in order to learn to write their peculiar characters with ease and freedom and correctness is undoubtedly a great means in developing their mastery of the pencil and brush in their characteristic art. The Japanese do not rest the hand even on the fingers, but move the whole arm, holding the pencil and brush vertical.

If children can draw with the brush without first sketching the leading lines with

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[1] The Prang Water-Color Box No. 1 is recommended. This box contains three cakes of fine quality and extra size, — one each of carmine, ultramarine, and mineral yellow. The colors work easily and smoothly and mix readily into secondaries, tertiaries, and intermediates and broken colors. They are put up in attractive boxes with hinged covers. Two quill brushes of good quality and generous size, with wooden handles, are included in each box. The inside of the box cover is finished for use as a palette with three divisions.

pencil, it will not be well to repress such effort. Young children are less self-conscious than older ones, and if technical results are not expected beyond their power to produce they will show great courage and often surprising ability. They should, however, think carefully before making a line and perhaps practise the movement just over the paper, before making the stroke. A tactful teacher will see ways to gently guide or restrain, but it should be borne in mind that it is especially desirable in all this work that the children should have as much freedom as possible. It is not direct results that we should expect, but the development of power.

Sketching the outline is necessary in some examples of historic ornament or decorative design. In order to avoid erasing upon the paper, which seriously injures the surface for water-color or ink, it is well to have the pupils sketch the design first upon thin paper and then transfer to the sheet which is to receive the color or ink.

How to Use Water-Colors. — Washes may be laid perfectly flat by working with the brush full of wet color, beginning at the top of the figure and carrying the color across the enclosing space from left to right, inclining the paper slightly and dragging the color down as it pools. The excess of color at the lower edge may be lifted with the brush if the brush is nearly dry.

If the first wash does not produce a tone of sufficient depth, another or several others may be added, taking care that one wash is thoroughly dry before applying another.

For practice in laying flat washes the children are much interested in filling squares, oblongs, circles, triangles, quatrefoils, trefoils, etc. These decorative motives may be painted and the enclosed spaces filled by the children; they may be drawn by the teacher (by drawing one sheet carefully and pricking through many sheets to secure proper dimensions and connecting points by lines or curves) or the children may color their own drawings.[1] The hektograph is also a great aid to teachers.

A graded wash from the full tone to a pale tint may be laid by starting with a brush full of color (very wet) and carrying the tone as far down as the full depth of the color is desired, then by adding water and no more color every time the brush starts from the left to the right, the full tone will change, giving a graded effect ending in a pale tint. Long vertical oblongs are excellent for this exercise.

Blotted washes are made by alternating the full depth of a color with a tint of the same color added at irregular intervals. Sometimes different colors are used, as Prussian or ultramarine blue and touches of emerald green or raw sienna, thus producing stained-glass effects. This work is delightful for color composition. Simple sky effects may be obtained by the use of a blue wash, lifting the color in places by means of the brush to simulate clouds.

Practice in laying washes is very essential as a preliminary to the study and rendering of examples of historic ornament and original design.

Color for the washes may be prepared or mixed in the depressions for that purpose

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[1] The Prang Outline for Color Work. These consist of 28 different decorative examples, lightly printed on heavy white paper, suitable for water-color washes. The sheets are 6 × 6, one figure only on each sheet. Blank sheets of the same size can also be supplied for optional exercises.

on the inner surface of the lid of the paint-box. If moist color in tubes is used special pans are necessary for mixing.

The effect of the juxtaposition of colors may be practically demonstrated by surrounding squares or circles of the same color with different colors, as, for example, surrounding a red square with yellow, another red square with orange, and so on with blue, green, and violet. The children will thus see for themselves the change in effect. (These same experiments may be carried out with colored paper, the children cutting the decorative shapes and thereby gaining much in manual dexterity.)

Compositions of flowers or sprays of leaves, budding twigs or seed vessels, within an enclosing space, as a circle, square, or oblong, may be painted in early work in monochrome, as, for example, in quite a full tone of blue, the blue being modified in later stages with enough of red and yellow to neutralize it. The blue of Canton china is an excellent tone for such work.

Landscape composition may be well carried out in several values in ink or water-color, keeping the washes very flat. This flat treatment is perfectly satisfactory to the child, and, by dealing in clear washes handled directly, muddy combinations are avoided.

When more pictorial treatment is attempted, the same direct treatment should be encouraged and the children led to see the value of using as pure color as possible. The best artists, at present, use very few, if any, brown, gray, or any so-called neutral pigments,[1] but depend for such effects upon the juxtaposition of pure colors or upon the mixing of red, yellow, and blue with a dash here and there of pure color. A clear sunset sky may be vivid with yellow and red, while against it the trees are very dark green and in some places very deep blue. The artist will mix the colors very little, but while working rapidly will lift the wet color in one place nearly off the paper and add depth of color in another, suggesting grays, violets, and neutral tones by the juxtaposition of colors which produce their effect. This preserves the richness of the colors and their depth and brilliancy.

It is not meant by this that "outdoor effects" should be sought as shown in the works of Manet, Monet, and others where pure colors are juxtaposed in small masses, the pictures to be viewed at a distance. It is meant, however, that the clearer and purer the pigments are used the more brilliant is the result, and in decorative or pictorial work gray (and various broken colors) can be produced not only by the juxtaposition of colors, but also by working as directly as possible from the paints, keeping the brush full of color and water and letting the color blend in the brush or on the paper rather than doing much of the mixing on the pan. The effects produced in modern stained-glass are good illustrations of such a use of color.

The mixing of colors and the use of flat washes, both so necessary for decorative effects, will lead the children to see the results of various combinations of color.

When expressing in a pictorial and not a decorative way, the work should be as

[1] An artist's box usually contains more than one yellow, red, or blue, with very few neutrals. A master of technique can use almost any pigment or combination of pigments, and produce good results, because he knows just what effects he desires to bring out and just how far it is safe to combine the pigments. But children without this experience are safer with a very simple palette and no neutrals.

individual as possible, that is, the children should express as they individually see. It would be a mistake for the teacher to give directions or definite advice as to what colors to combine or juxtapose to give the exact tint or tone of a flower, leaf, or stem, as different children may see or feel the color differently. One child sees green in the shadows or a glow in the reflected light and should express what he sees as well as he can. One child sees red in the stem and he puts it there; another sees the same part as brown; into his red he touches a bit of blue and perhaps of yellow. In such work children should be encouraged to work as much as possible directly from the paint, avoiding much mixing and yet keep the color very wet.

If the teacher can possibly do it, it would be well to study into the methods of treating water-color when used decoratively and pictorially, practising in both methods. It will be a fascinating study, and the teacher will be well repaid in knowing better how to help the children.

THE PRANG ELEMENTARY COURSE

IN

ART INSTRUCTION.

PURPOSE OF THE PRANG COURSE IN ART INSTRUCTION.

THE purpose of THE PRANG COURSE IN ART INSTRUCTION is to lead the child through a study of form and color, as manifested in nature and in art, to the use of his own individual creative ability through expression by pencil and by brush in terms of art. In the first two primary years of school, this purpose is developed —

By exercises in modeling,
By acquainting the children with type forms and shapes through such occupations as building, arrangement, paper folding and cutting, etc.,
By exercises with color tablets, colored paper, and the brush to develop color perception and expression,
By observation of fine pictures suited to their grade,
By imaginative drawing stimulated by well-selected quotation, with some simple attempts at composition, and
By free drawing from the pose, from animals, from grasses and flowers, and from models and objects.

All these exercises stand in close relation to each other in their appeal to the child through interest, and in their progressive nature.

After the first two years, children are prepared for more conscious effort; as their experience widens, they come to realize that their own drawing fails to express their ideas and to reach their ideals. They desire to know how others draw and are eager for more definite instruction. To meet this desire and to steadily develop their creative power along sequential lines, more definite means are required.

THE PRANG ELEMENTARY COURSE IN ART INSTRUCTION, consisting of a series of drawing-books and manuals, provides such means. In this course, the work has three interrelated and complementary lines, — observation of form and color in objects and the graphic record of this observation — observation of works of art — the utilization of all these observations in creating beautiful compositions.

The exercises have been planned with relation, on the one hand, to their nearness to the child, to his interest, and to their adaptation to his growing powers and capabilities, and, on the other hand, to their provision for opening a wider horizon, and for developing richer concepts than his ordinary experience would furnish, that he may be thus incited to individuality in beautiful creations. From this statement it will be seen that the vital feature in all this work is the development of the creative activity of the child toward the production of the beautiful.

With this ultimate purpose, the authors have endeavored —

1. *a.* To come in touch with the child through things that are near him — that appeal to him — through the study of

   children,
   animals,
   plants,
   familiar objects,
   good drawings and pictures.

   b. To lead him to appreciation of beauty by the selection of beautiful examples and aspects of all these objects.

   c. To enlarge his horizon and furnish him with new concepts and new material for creative imagination by giving him objects that are new to him, but kindred to those which he already knows.

2. To aid him to classify his concepts so that they may stand in his mind in the proper relation to each other and be easily at his command.

3. To incite him through his own study of objects and of artistic examples to use the concepts thus gained to make new creations, which shall show his own feeling for the beautiful.

These aims furnish the key to the sequence of the exercises in THE PRANG ELEMENTARY COURSE IN ART INSTRUCTION.

GENERAL PLAN OF THE SERIES.

THE PRANG ELEMENTARY COURSE IN ART INSTRUCTION is intended to cover the time from the third to the eighth years of school life.

As different periods of promotion prevail in different towns, some promoting half-yearly, and others yearly, the drawing-books of this series are issued in two forms — one form giving the work of a half-year in a book, the other form giving the work of a whole year in a book. The half-year books are designated by numbers, Nos. 1, 2, 3, 4, etc.; the year books are designated by years, Third Year, Fourth Year, etc. The drawing-books are accompanied by Manuals for teachers, equally available for the half-year or the year drawing-books. Each drawing-book contains

ILLUSTRATIVE PAGES SHOWING THE WORK OF MASTERS.
DRAWING PAGES GIVING FINE EXAMPLES AND SEQUENCE OF WORK.

Illustrative Pages. — The illustrative pages are given to show examples of good art by acknowledged masters, which will not only give pleasure to the children, but will also show them that there are very many ways of drawing, that it is not neces-

sary always to express outline and light and shade in the same way; but that the great point is to have first thought and feeling, then study and training, each enlarging the possibilities of the other.

The wide range in these illustrative pages gives great variety of style and rendering, encouraging freedom and originality in the pupils' own work. They show admirable technique with pencil, pen and ink, charcoal and brush. Some are in pure outline, some show study for masses of light and dark and of color, others show light and shade simply expressed.

Examples are given from the work of both old masters and artists of the day: —

Da Vinci,
Raphael,
Van Dyck,
Rembrandt,
Landseer,
Millet,
Barye,
Le Rolle,
William Hunt,
Wm. Hamilton Gibson,
John La Farge,
Elihu Vedder,
Abbott Thayer,
John S. Sargent,
Edwin H. Blashfield,
Ross Turner,
C. D. Gibson,
Herbert Adams,
Winslow Homer,
F. S. Church,
Arthur W. Dow,
C. H. Woodbury,
Edith Clark,
Lucy Fitch Perkins,
Anna Klumpke,
Tanyu,
Hiroshige,
Hokusai's Daughter.

There are also illustrations of the finest examples of architecture in the various styles.

Drawing Pages. — The illustrations on the drawing pages give help in drawing from nature — from plant, animal, bird, and insect life, and from the human figure, from familiar objects, and from simple effective buildings; — from type models singly and combined, in various positions; — and from historic ornament from the flat, relief, and round, both detached and in interesting applications in architecture, ceramics, etc. They include also examples of pictorial, decorative, and industrial composition. Working-drawings, patterns, and views are clearly illustrated.

The illustrations on the drawing pages are printed to give pupils good examples of form, line, and composition, to interest them in the work of others, to lead to a higher standard of excellence than exists in the individual, and to be a stimulus and help to the pupils by their suggestiveness as to subject and as to manner of rendering. They assist in providing a regular sequence of study and save time of teacher and pupil. Good copies are as necessary and helpful to the child as art-studies to the adult. In some cases the children may gain much by copying, although the

examples are of such a character and so arranged that there is abundant opportunity on every page for free, original, and individual work.

Application in Other Studies. — As will readily be seen, the use of these text-books will be of great practical value in securing *good* drawing in other studies. The examples given include many which are immediately suggestive of good composition and rendering in the sketching of specimens studied in Elementary Science lessons (botany, zoölogy, entomology, geology, etc.), the sketching of historic buildings and furniture, and of objects interesting in geography; the sketching of buildings and scenes associated with the study of literature, and the imaginative illustration of poems and stories, including the human figure.

Mediums for Drawings. — It is assumed that in most schools the lead pencil will be the most available medium for drawing. The drawing-book pages present, however, a paper which can be used for brush work, or for pen and ink if desired.

Color. — Opportunities are given for the expression of color in three ways: —

By pencil-painting, as shown in certain examples of pose-drawing, drawing of animal life, foliage, and still-life, and historic ornament.

By the use of colored papers, cut and mounted in connection with the study of historic ornament and of decorative design.

By the use of water-colors.

NATURE OF THE WORK.

Throughout the series each pupil is encouraged to express himself freely and according to his own feeling, and at the same time he is offered the broadening and enriching influence of what has been done by masters in art; so that while on the one hand he is growing in individual power to express by drawing, on the other hand he is gaining through acquiring more and more of thought and beauty to express. The creative powers are stimulated and each child learns to feel that he himself has something of his own to tell with pencil or brush.

The exercises require drawing

From Nature,	From Art Examples,
From Objects Made by Man,	From Memory,

to culminate in composition — the work of the creative imagination.

STUDY OF FORM AND COLOR.

In the first two primary years the children have selected the models of type forms from their groups of objects, have built with them, have handled and moved them,

have arranged them, have imagined them to be all kinds of familiar things, have talked about them and have drawn them until the sphere, cube, and cylinder, and their relations, the ellipsoid, ovoid, the prisms, the cone, the pyramid, and vase form have become not only as "household words" in the children's speech, but through pleasant associations have also come to be mental companions, which are summoned at will. The work now given in form will be such as to keep in remembrance these types and also to lead to their further study.

In a like way in their primary years through a loving, happy study of grass and sky, of leaf and flower, and of types of color, the children have learned to know and to feel the colors **red, orange, yellow, green, blue,** and **violet** in normal and lighter tones. They are now carried farther in color study and expression, by the use of colored paper and of the brush.

By this study of form and color, the pupils gain fine material for use in expressing their ideas of composition.

If we should wait until the pupils were equal to producing drawings which would compare not unfavorably with the examples in the books, even Book 1 would not be appropriate for young children. We must put aside the idea that ability to draw well can come as any immediate result of studying good examples or of drawing from objects. There may be art feeling in the simplest and crudest effort, while it may be a poor drawing from the adult or technical standpoint. These books with their beautiful illustrations will fail in the inspiration they might otherwise give if the children are forced beyond their powers.

Pupils will gain in individual expression and appreciation by seeing beautiful things, just as they gain along similar lines by hearing and reading fine examples in literature. Therefore, in order that the children may develop in a natural manner, it is hoped that the teacher will accept with tranquillity even very crude results, if they express the best efforts of the pupils.

BOOKS 7 AND 8.

SIXTH YEAR.

GENERAL PLAN OF EXERCISES FOR THE SIXTH YEAR.

Books 7 and 8. — Sixth Year Book. Showing their Purpose, Sequence, and Interrelation.

The exercises for the Sixth Year are chosen to open to the pupil more widely still than in previous years the world of nature and of art, by the presentation of the drawings of artists, and of exercises for drawing from life, and from familiar and beautiful objects. These exercises appeal to him through his innate delight in beauty of form and color, — a beauty resulting from simplicity, harmony, and repose — and thus lead him to creative activity.

The exercises include the following: —

From Nature.	Branches and berries.	Life in growth.
	Flowers.	
	Landscape — window study.	
	Figure studies.	Life in growth, action, and feeling.
	Animal studies.	
From Art.	Familiar and beautiful objects.	Association.
	Fine buildings.	Idealization and construction.
	Type forms.	
	Working drawings — views, sections, plans, patterns, and development.	
	Beautiful objects.	Rhythm and beauty.
	Historic Ornament — Egyptian, Greek.	Radiation — Tangential union.
	Historic architecture — drawings, capitals, plans.	Space distribution.
Creative Work by Pupils.	Space relations in mouldings, doorways.	Individual power.
	Space relations in flower forms and simple landscapes.	
	Patterns of type forms and objects.	
	Plans of rooms.	
	Brackets — constructive design.	
	Decorative arrangement.	

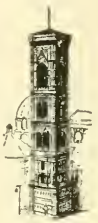
These exercises are classified generally as above, yet all are closely interrelated as pages 76–79 show. To maintain closely this interrelation, the illustrations on the

drawing-book pages were prepared with reference to more than one subject; therefore the same illustration sometimes occurs on pages 76–79 in more than one connection.

NATURE. — PLANT LIFE. — OUTDOOR STUDY.

Book 7, p. 3.

Book 7, p. 4.



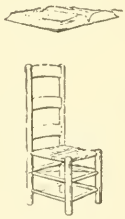
Book 7, p. 9.

Book 8, p. 12.

The study of nature is seen in the exercises on berries, flowers, and leaves, and in the landscape exercises and in the window study. The study of nature is taken according to the season of the year.

FAMILIAR AND BEAUTIFUL OBJECTS.

Book 7, p. 6.



Book 7, p. 7.

Book 8, p. 4.

Book 8, p. 3.

Book 8, p. 6.

The study of simple, familiar, and beautiful objects is given in the wall and the columns, in the books and chair, in the pottery forms,[1] and in the cylinders, brackets, etc., used for the constructive work.

[1] The Prang Educational Company has had manufactured abroad, expressly to their order, a large variety of pottery and basket-ware forms, to furnish the schools with beautiful modifications of the simple type forms, embodied in vases and other interesting objects, made additionally attractive by good color.

The Pose and Animals.

Book 7, p. 1.

Book 7, p. 2.

Book 7, p. 8.

Book 8, p. 5.

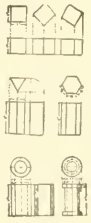
A human being is the object which is the nearest to the pupil, being related to him by life, action, and emotion kindred to his own. Therefore the pose of a figure is given. This exercise is related to the special interests of the child through appeal to experience — and to leaves, fruits, flowers, and animals through the life principle. The pose appears again in other illustrations. Next in nearness are animals — domestic animals are especially studied in this year.

Type Forms.

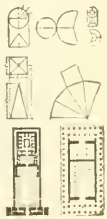
Book 7, p. 6.

Book 7, p. 7.

Book 7, p. 9.



Book 8, p. 8.



Book 8, p. 9.

The teacher should note that the idea of type form underlies all the exercises of the year. They are especially called for on two pages. They are illustrated on other pages, and form the basis for simplicity of choice of objects.

Decoration.

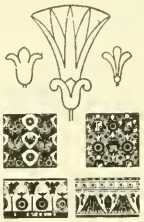
The pages of ornament appeal to the pupil through simplicity and rhythm, through interest in familiar ornaments, rosettes, etc., through the symbolism, orna-

ment, and history of the Egyptians and Greeks, and through original design for units, borders, and surface coverings.

They are related to types of form and to plane figures through the circle, square, triangle, and simple rectangular and parallel effects, produced with both curved and straight lines.

In these pages there are introduced borders, units, and figures complete in themselves, some of which can be discovered by the pupils in their daily surroundings.

Book 7, p. 10.



Book 7, p. 12.

Book 7, p. 13.

Book 8, p. 6.

Book 7, p. 14.

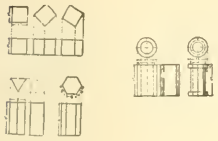
Book 8, p. 7.

The examples of historic ornament are also very closely related to composition, furnishing very fine examples of space relations. They are to be especially studied with reference to beauty produced by spacing and proportion.

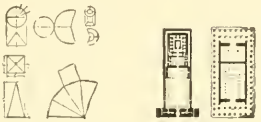
Working-Drawings.

One of the chief ways in which the creative faculty may be exercised for social well-being and for beauty is through the subject of Construction, which furnishes through its various drawing conventions the graphic language for industry and manufacture. Looking forward to this end, the exercises in making working-drawings of the simple types and kindred objects which appeal to the child are given. These connect directly with the type forms, and with objects familiar and pleasing by association.

Individual creation in space relations through the division of spaces by vertical and horizontal lines for paneling, and the use of simple landscape features and of flowers as motives is definitely called for. Examples showing the general nature of this work are given here.



Book 8, p. 8.



Book 8, p. 9.

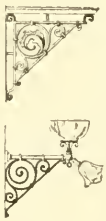
Book 8, p. 11.

Space Relations.

The development of the creative power of the child in the production of the beautiful is the supreme purpose of the exercises. Underlying the production of the beautiful is the great principle of fine space relation.

Book 7, p. 14.

Book 7, p. 15.



Book 8, p. 11.

Book 8, p. 13.

This principle is something which the pupils can gradually be led to feel through the study of good examples and through various exercises calling for selection of form and aspect, for grouping, for placing upon the page, and for rendering. These are all features of composition, of beauty expressed in terms of art. To this end the choice selections are given from the works of masters on the illustrative pages of the drawing-books.

BOOKS 7 AND 8.—SIXTH YEAR.

REPRESENTATION. *Appearance of Form.* **Picture-Drawings.**	NATURE: Berries; Trees; from the Pose, from Animals; Flowers; Landscape. OBJECTS: Books, Chairs, Vases, Pitchers, and other familiar objects; Towers. TYPE SOLIDS: Cube, Square, Prism.
DECORATION. *Ornamentation of Form.* **Original Design.**	HISTORIC ORNAMENT: Egyptian and Greek. COLOR: Colored Paper, Brush, Light and dark.
CONSTRUCTION. *Facts of Form.* **Working-Drawings.**	SOLIDS: Cube, Square, Prism, Equi. Tri. Prism, Cone, Pyramid. PATTERNS: Cone, Pyramid; Objects similar in form. WORKING-DRAWINGS: Two and Three Views, figured.
FINE EXAMPLES.	From Rembrandt, Millet, Arthur W. Dow, John La Farge, Edwin Blashfield, and Anna Klumpke. From Japanese artists—Hokusai's daughter and Hiroshige. From Egyptian and Greek architecture.

COMPOSITION.

REPRESENTATION: Groups of Models or Objects; Landscape.
DECORATION: Space Relations; Light and Dark, Color; Flower Composition.
CONSTRUCTION: Mouldings; Doorways; Brackets.

BOOK 7.

SIXTH YEAR. — FIRST HALF.

The Prang Elementary Course in Art Instruction is published in two separate editions, prepared to meet the varying conditions of the use of one or two books a year. In the edition providing for the use of two books a year, the books are designated as "No. 1," "No. 2," "No. 3," "No. 4," "No. 5," "No. 6," etc.; in the edition providing for the use of one book a year, the books are named "Third Year," "Fourth Year," "Fifth Year," etc. This Manual text has been especially prepared to meet the needs of both editions.

BOOK 7, PAGE 1. SIXTH YEAR BOOK, PAGE 1.

ILLUSTRATIVE PAGES.

FIGURES. — Millet.

Illustrations. — The drawings on page 1 are by Millet; simple in treatment, calm, strong, and true, telling of the nobility of labor as seen in French peasant life.

Jean François Millet (1814–1875), who was born at Gruchy, France, was one of the great modern painters. He was born a peasant; his father and mother were peasants, and together they toiled in the fields. His father, however, found time to see the beauties of nature and to point them out to the boy, saying to him of a tree, "See how fine! Look at that tree, — how large and beautiful! It is as beautiful as a flower"; or looking out of the window, "See!" he would say, "that house half buried by the field is good, — it seems to me that it ought to be drawn that way." He also modeled in clay and carved in wood for his son. His sister Emilie remembered, that once when François was a child of four or five, his father asked the little ones what professions they would choose when they grew up, and the boy replied, "I mean to make pictures of men." One of the professors of the high school at Versailles, who chanced during his vacation to meet and talk with young Millet, said, "I have met a child whose soul is as charming as poesy itself." And soon that child began to express himself, not only by words, but also by drawing. When he was eighteen years old he drew with a bit of charcoal, upon a white wall, the picture of a tree, or an orchard, or a peasant plodding home from work. They talked these drawings over at home, and decided that Jean should study to be an artist.

His teachers in Cherbourg could not help him much; and in 1837, at the age of twenty-three, he went to Paris to the studio of the famous artist Delaroche. He was a fair, broad-chested peasant, with long light hair falling wildly about his shoulders. His fellow-students called him "the man of the woods." Diaz, Rousseau, and Corot, who afterward became such great artists, were among the pupils of Delaroche at this time with Millet. They are all now known as artists of the Barbison school.

Millet soon left the studio of Delaroche, and supported himself by sign-painting, by painting portraits, and by making copies of the great pictures in the galleries. At the same time he read all that he could, for, though a peasant, he had been well

educated. He read Virgil and Homer and Shakespeare, Walter Scott and Byron, Milton and Burns, Goethe and Schiller, Emerson and Channing. He also studied the old masters. He says: —

"For a month the masters were my only occupation during the day. The early ones drew me by their admirable expression of gentleness, holiness, and fervor; the great Italians by their knowledge and charm of composition. Fra Angelico filled me with visions; and when I returned at night to my miserable lodging I did not want to think of anything but those gentle masters who made beings so fervent that they are beautiful, and so beautiful that they are good."

Yet he kept in his heart the peasant life that he knew so well, and which was so full of humanity; and in 1849 he painted his great picture "The Sower." He constantly heard what he called "the cry of the earth," and he portrayed it in his pictures of peasant life. He had a hard time to live, for he and his family at many times had not enough to eat. In 1849 he left Paris and went to Barbison, taking a house of three rooms. He lived there with his family, and painted, happy in his privations, for he was again in the midst of his inspiration, the peasant life of toil, — "the true humanity, the great poetry." There he worked, gaining fame and moderate means, and there he died in 1875.

He drew the digger, the sower, the haymaker, the thresher, the gleaner, the shepherdess, the goose girl, — all phases of peasant life and labor attracted him. Lead the pupils to see how essential the service of tilling the soil is; how all depend on it, and how, therefore, it may be symbolic of all service, — noble and dignified. The chief ruler of this country *serves* the people. The motto of the Prince of Wales, who will rule over the greatest empire of the world, is "I serve."

Millet excelled in draughtsmanship, in mastery of form, and in the expression of tender and profound feeling. He sketched with great rapidity. On returning from a walk he would frequently cover many sheets of paper with sketches of what he had seen. An illustration is given of such a sheet, — a girl raking a heap of smoking weeds together, a profile of a girl, a hoe, a young shepherdess with a staff resting her cheek on her hands, a man leaning on a pitchfork, a boat at full sail, ducks on land and in water, cottages in a forest, and finally this motto so expressive of him: "*Il faut pouvoir faire servir le trivial à l'expression du sublime c'est là la vraie force.*" "Make the trivial serve in the expression of the sublime. That is true strength." He made such sketches rapidly to obtain motives for his pictures; but when he had determined on the motive, he drew with very great care, working very slowly.

Sketches. — MILLET.

His great endeavor was to portray character through types rather than individuals. The peasant was to him a living being who, through his toil, symbolized humanity. Among his best pictures are "The Gleaners," "The Sower," "The Sheep Fold," and "The Angelus." It will be interesting to pupils to make collections of his pictures. He was known, however, as well by his drawings as by his paintings; and some of his best drawings have been reproduced for these drawing-books, that they may stand as an inspiration to the pupils.

His art principle was that the picture must be a whole and must give one single impression. He sought then for a fundamental note for his picture — determined on the central thought and then made everything contribute to that thought. He selected and rejected details, and he carefully composed his pictures. There was no hap-hazard work; it was all carefully thought out. The figure was the main thing; nature was the frame, for the life of the peasant is in nature, but that nature was chosen that would be in harmony with the thought of the picture. The point to which he never ceased to return is **character**, and this was expressed by careful selection of costume, attitude, gesture, features, and of the landscape accessories, eliminating everything that would detract from the character sought. Moreover, he always worked for a type — the ideal — believing it to be more true than the real just as Aristotle said poetry was more true than history.

The Sower. — And now we come to one of his great pictures. The illustration in the drawing-book was taken from a reproduction of a drawing.[1] See how simple the picture is! A single figure, sturdy, well-planted, in peasant costume, grain bag at his side, scattering the seed with powerful fling, grandly treading the newly ploughed field that stretches its span so far, while away in the distance some buildings faintly rise — and a man and horses are ploughing. See how everything is concentrated — the details in the distance are just enough to suggest the expanse of ground — the largeness of the task. The moving clouds seem in a way to accent the motion of the strong arm. The man and the work are the great things, so the field is broader than the sky. The work is only begun, so the space ahead of the man is more than that behind him. The light is so thrown that the man is illuminated — his work is ennobled.

And how all the technical rules of composition have been obeyed — the vertical figure and the horizontal edge of the field balance and are mediated by the oblique

[1] There are two great paintings of The Sower — one is owned abroad — the other is owned by Mr. Quincy Shaw, Boston.

arm of the sower, which again is rhythmically reproduced in the clouds. All is in harmonious composition and all supports and strengthens the main thought — noble labor.

I saw a Sower walking slow
Across the earth, from east to west.

— James Russell Lowell.

The Angelus. — And how shall we study this great picture? Again, how simple! The sun has set, a broad peaceful twilight sky sending its last rays across the field, where two peasants are about finishing their day's work; the wheelbarrow is filled with bags, the basket is at her feet, and the fork is beside him; they stand with bowed heads full of devotion — far from the distant church spire just visible on the horizon, from which sounds The Angelus, the bell for evening prayers. When Millet first showed the picture, M. Sensier cried, "It is the Angelus!" "It is indeed," Millet answered, "you hear the bells."

And this picture too is for the uplift of labor. See how details are left out, how only those things are given that tell the thought, the humanity that makes these peasants akin with all.

The composition has only simple elements — the long horizon, the vertical figures, relieved by the incline of the fork, while in mass and in direction the basket and the wheelbarrow complement each other and rhythm shows in the handles of the wheelbarrow.

But moreover, through this composition the thought is emphasized — it is labor, whose implements are there, and which being placed just so tell best their story. How grand and strong the lines of the figures are, how beautiful the bowed heads! A firm will directed the work, leaving nothing to chance.

"Against the sunset glow they stand,
Two humblest toilers of the land,
Rugged of speech and rough of hand,
Bowed down by tillage;
No grace of garb or circumstance
Invests them with a high romance,
Ten thousand such through fruitful France,
In field and village.

"The day's slow path from dawn to west
Has left them soil-bestained, distrest,
No thought beyond the nightly rest, —
New toil tomorrow;

Till solemnly the "Ave" bell
Rings out the sun's departing knell,
Borne by the breeze's rhythmic swell
O'er swathe and furrow.

"O lowly pair! you dream it not
Yet on your hard unlovely lot
That evening gleam of light has shot
A glorious passage;
For prophets oft have yearned and kings
Have yearned in vain to know the things
Which to your simple spirits brings
That curfew message.

* * * * *

"enough for us
The two lone figures bending thus,
For whom that far-off Angelus
Speaks Hope and Heaven."

— Lord Houghton.

BOOK 7, PAGE 2. SIXTH YEAR BOOK, PAGE 2.

ILLUSTRATIVE PAGES.

Sketches and Studies. — John La Farge.

Illustrations. — The sketches and studies reproduced from pencil drawings by John La Farge, on the drawing-book page, show the method of an artist in working for a picture — first a sketch giving the conception of the whole, then careful study for the various parts to be used to make the whole.

John La Farge, the elder, father of the great American artist, was a French officer, who after various adventures by sea and land, reached America in 1806. He became quite wealthy and settled in New York City, where **John La Farge**, his son, the artist, spent his early days, and where he received a legal and classical education. He was taught to draw in a rather minute, precise way by his grandfather, who was a miniature painter. When he went abroad he found himself with an inclination to know something of painting as an accomplishment. With this thought, he entered the studio of the great French artist, Couture. Of his work there, Mr. La Farge says: —

"My stay at the atelier was not a long one. It was mainly taken up with drawing from the model. My master not only approved of my work, but warned me of the danger of imitating his manner through the methods of his students. . . . The master's advice was to study and copy the drawings of the old masters in the Louvre and to postpone the practice of painting. . . . I made drawings from Correggio, Leonardo, and others. My greatest fascination, however, was Rembrandt in his etchings."

Returning to New York, he grew more and more interested in painting, and found a master in William Morris Hunt. At this time, Hunt was growing in appreciation and enthusiasm for Millet. La Farge and his master worked together, not always agreeing in method or theory, but always friends. The sketch-books of this time are many; they contain first thoughts and also carefully worked out studies — mere records, sometimes of pose and gesture, or most minutely drawn studies from nature, showing a pre-Raphælite tendency.

He drew and painted assiduously; he made many drawings on wood for magazines and books, for wood engraving was the chief means of book illustration at that time. About the time of the Civil War he began to make his qualities

as an artist felt. At this time, he painted his fine figure of St. Paul, described by G. P. Lathrop in *Scribner's Monthly*, 1881.

Among Mr. La Farge's greatest works are the decoration of Trinity Church, Boston, and the painting of "The Ascension" in the Church of the Ascension, New York. Both these churches are easily accessible to visitors, being open nearly every day.

Mr. La Farge is well known, also, through his remarkable and individual work in stained glass. He uses in this work many methods that are peculiarly his own, to bring out the richness and opalescence of color that he so strongly feels.

In all his work his subjects are noble and uplifting. To the nobility of subject he joins nobility of composition. Of art, he says, in "An Artist's Letters from Japan": —

"I have far within me a belief that art is the love of certain balanced proportions and relations which the mind likes to discover and to bring out in what it deals with, be it thought or the actions of men, or the influences of nature, or the material things in which necessity makes it to work. I should then expand this idea until it stretched from the patterns of earliest pottery to the harmony of the lines of Homer. Then I should say that in our plastic arts the relations of lines and spaces are, in my belief, the first and earliest desires. And again I should have to say that, in my unexpressed faith, these needs are as needs of the soul, and echoes of the laws of the universe, seen and unseen, reflections of the universal mathematics, cadences of the ancient music of the spheres."

Special Examples. — The upper illustration at the right on the drawing-book page shows sketches for the following verse from Longfellow's "Skeleton in Armor": —

"Far in the Northern Land,
By the wild Baltic's strand,
I, with my childish hand,
Tamed the gerfalcon."

The illustration at the left shows careful studies for the same subject. His sketches and studies are very frequently accompanied by notes on the margin. In this case, the feathers at the top are noted as being one-third the length of the bird.

The studies of the bird's head will be suggestive as to what pupils can do. They are learning now to make very quick sketches and produce very creditable sheets of drawings made from a pet bird brought to school.

The lower illustration at the right is a sketch for the following verse from Tennyson's "Enoch Arden": —

> "Here on this beach a hundred years ago
> Three children of three houses, Annie Lee,
> The prettiest little damsel in the port,
> And Philip Ray, the miller's only son,
> And Enoch Arden, a rough sailor's lad
> Made orphan by a winter shipwreck, play'd
> Among the waste and lumber of the shore."

Pupils will be interested to tell what the artist had to say in these two sketches. The sketch for the verse from The Skeleton in Armor expresses so much. The graceful lines of the boy's figure show youthful alertness; the wind, too, is blowing there on "the wild Baltic's strand"; the upstretched "childish" arm and "hand" are in beautiful balance to the "gerfalcon" perched on the other arm. Evidently Mr. La Farge had in his mind that he could bring out his subject best through "certain balanced proportions and relations" of which he spoke in "An Artist's Letters from Japan."

In the sketch for Enoch Arden, what had he to say? We should all know "Annie Lee, the prettiest damsel in the port," but which is "Philip Ray, the miller's only son," and which is "Enoch Arden, a rough sailor lad"? Mr. La Farge doubtless had in his mind the whole story (which was really that of Enoch Arden) even in the sketch of the children and made everything tend toward emphasizing Enoch Arden. So here the rough sailor lad is undeniably shown in the sturdier boy in heavy, awkward clothes, while in the distance are the wharf and the ships, to repeat the thought of the sailor boy.

> "Beyond, red roofs about a narrow wharf
> In cluster; then a moulder'd church; and higher
> A long street climbs to one tall-tower'd mill."

THE SUBJECT OF REPRESENTATION.

In the earlier books of this series, emphasis was put upon the interesting aspects of the things studied rather than on the pupils' methods of representing them. It is assumed now, in the higher books of the series, that pupils who have advanced to this grade will have acquired habits of sympathetic observation, both of objects and of pictures.

The instruction, from this point onward, puts steadily increasing emphasis on the development of individual power through wise selection of motives, through the expression of beauty of forms and values in composition and through the mastery of skill in the artistic rendering of effects of perspective, texture, light and shade, color and atmosphere.

BOOK 7, PAGE 3. SIXTH YEAR BOOK, PAGE 3.

REPRESENTATION.

NATURE. — Branches. Berries.

ART. — Selection. Composition. Choice of Aspect. Rendering.

[The pupil selects and arranges branches of berries and sketches them; chooses one that presents a beautiful aspect and fine balance, and draws it in the book, seeking for beauty in the rendering.]

Preparation for the Lesson. — When sprays or flowers are used for study, cut them the night before the lesson, plunge the stems in water, and keep in a cool place until needed. Plants usually wilt after cutting, but if so treated will revive later, and remain about the same for some time.

Plant life is not at its best when wilted; the pupils feel this, and their interest once roused they will delight in sharing the responsibility of providing and caring for such material. Incidentally it will help in nature study.

The alder berry, snow berry, bitter sweet, and woodbine are good as selections. The fruitage, or seed vessels of the burdock, bagweed, shepherd's purse, stramonium, milkweed and rose hips are all very beautiful and are not only interesting subjects for a drawing lesson, but are excellent as motives for decorative design and for treatment in ink and water color.

"Weeds" as we call them are often rare plants in some other country. We pass them by because they are so common, growing everywhere by the wayside, in the field or meadow. In England, the many petaled daisy, the pink primrose and the forget-me-not, all so rare with us and not often found outside of gardens or greenhouses, cover the ground in the springtime, in every direction.

"Once in a golden hour
I cast to earth a seed.
Up there came a flower,
The people said, a weed.

"Then it grew so tall
It wore a crown of light,
But thieves from o'er the wall
Stole the seed by night,

"Sow'd it far and wide
By every town and tower,
Till all the people cried,
"Splendid is the flower."

"And some are pretty enough
And some are poor indeed;
And now again the people
Call it but a weed."

— ALFRED TENNYSON.

Let the specimens selected be healthy and normal in growth as a rule, for while it is true that worm-eaten or ragged leaves sometimes add a certain picturesqueness

to the effect, just as an old and dying tree is often beautiful in its decay — our general purpose is to select *typical* examples for study which are seen at their best when full of vigorous life. When practicable, it is well for the pupils to bring in the vines or sprays themselves or certainly to help the teacher in supplying the class. As a matter of ethics it is not well to wait upon pupils too much; besides they take more interest in a lesson when they contribute to its success by a distinct effort of their own.

A sufficient number of sprays should be distributed, that each pupil may have a clear, but not too close view. Anywhere from four to six feet is a good distance from the eye, according to the size and character of the sprays. Large plants like the palm or rubber plant should be viewed across the room.

If the stem is woody and the leaves thick (so as not to wilt easily), then the spray may be pinned against a sheet of gray, manila, or white paper, the whole resting against a pile of books. Two sheets of cardboard can be connected and placed in such a way as to form a sort of easel, the spray can be arranged and pinned upon it in a desirable position, thus exercising the taste of the individual pupil. Such an arrangement can be set behind sprays of flowers which are in a vase or bottle, thus serving as an effective background, and helping, perhaps, to cut off the light on the shade side on the principle of a shadow box. These sheets of cardboard can be adjusted at any angle, and are easily collected, folded, and placed away for future use. Once provided, they are less trouble than a sheet of paper against a pile of books.

If the sprays are of a species that wilt easily it may seem necessary to keep the ends of the stems in water. Bottles are better for holding the stems than tumblers, if only the spray is drawn. The spray may be kept in place better by the addition of sand.

If Drawing-book 7 should be used in the early spring instead of fall, budding twigs, pussy-willows or leafless branches of various kinds may be substituted for berries or seed-vessels. An example of a pleasing treatment of pussy-willows can be found on page 12 of Drawing-book 4. Leafless twigs at any season of the year are beautiful when they show the characteristics of their growth.

The space on the drawing-book page may be divided into one vertical oblong and two horizontal oblongs beside it, or two horizontal oblongs, or two vertical oblongs, and within these spaces budding or leafless twigs may be arranged with the thought of the best possible composition in each. The character, force, and strength of the twig should be very carefully studied, and each pupil should make his own arrangements in the same way he would seek to solve a problem. A sheet of practice paper should be furnished to each pupil that he may by a series of rough

sketches finally decide upon the arrangements to be placed in the drawing-book. The examples on page 15 of the drawing-book, showing flower composition, suggest how sprays of berries might be "composed" in an oblong. It is of great value sometimes to come as near as possible to combinations of abstract lines, to realize their possibilities and their limitations. In our delight in pictorial treatment we are in considerable danger of overlooking the great value of drawing in line.

Suggestions of Methods. — Whatever example of plant form is chosen, it is better to have the same kind for the whole room, if possible. Lead the pupils to observe its habit of growth, first as a whole; then the growth of the leaves, alternate or otherwise. Does the leaf connect closely with the main stem, or has it a tiny stem of its own? Notice the form and the color of the berries. Do they grow singly or in clusters; do they appear darker or lighter than the leaves?

Call attention to such salient points, but do not say much. Leave the pupils to discover and feel as much as possible for themselves. Let them consider carefully the placing upon the drawing-book page, with a view to good space relations, and make a few leading lines upon practice paper before starting the drawing in the book. This is only to concentrate thought, and such sketching upon the practice paper should not proceed far. It is important not to exhaust the interest in the subject by an over-amount of preparation for the drawing in the book. While the work in the drawing-book should be the result of the pupil's best effort, it should be considered as a means and not an end. Even when falling far short of excellence it may show vigorous effect and intelligent observation, which will be a help to greater general culture as well as technical attainment in the future. The highest types in the way of art examples are contained in these books as an inspiration to teacher and pupils, but in no case should results be expected beyond the normal power of production.

An effect of color is shown in the examples on page 3 of the drawing-book, by the dark and light tones used. These can be admirably carried out with the lead pencil. These several tones are sometimes called "tone values" and even "color values." A soft pencil will produce a dark sufficiently strong to indicate the dark berries while the leaves may be rendered lighter, with perhaps the stem lighter or darker than the leaves, according to their real color relation.

A stem may be brown and the leaves dark green and both of about the same color value, but the stem may appear lighter than the leaves, here and there, if it has a smooth surface and catches glints of light. In fact, by color in pencil drawing, or any medium for rendering in "black and white" is meant this variation or difference in tones of light and dark which, when well handled, will suggest the difference in color which exists in the object drawn.

As the same spray will appear different in color in different positions, and as all persons do not see color alike, the pupil's work may vary considerably even from the same examples. There should, though, be a general effort to keep breadth of treatment with not many tones.

If the leaves are very narrow and of a deep color, pencil painting (see Manual, pages 59 and 60) may be used. In any case the pencil should not be sharp. Pencil painting should be limited to sprays with small leaves as it is not a suitable method for the expression of the different planes of a large leaf. Pencil painting is best suited to piquant effects, which show sparkling color, as the high light of a berry or a smooth and glittering stem. It is also admirably adapted to the treatment of some delicate grasses.

If water colors are supplied in the school, this page will furnish a good chance for their use. Sometimes it is interesting to transpose examples like those upon page 3 of the drawing-book into ink or water color. The two sprays show plainly that one has white berries and the other dark blue or nearly black. In ink or water color the treatment should be kept simple and direct, the effect obtained if possible in one wash. Where berries are highly polished, showing a glint of high light, the paper may be left for that light. Reflected light is usually warm, so that when painting in water color a dark blue berry will often show a touch or tendency to red on the side away from the light. By keeping the brush full of water and color, and touching first on one paint and then on another, as the color seems to need change or modification, a very good expression of the whole can be obtained at once. Remember that water colors dry lighter than they appear when applied. If greater depth of color is desired in some places after the first touches are made, wait until the first wash is dry before applying more paint. Only very skilful workers can apply more color while the paper is wet without producing a muddy effect. Experience will show just the right way to apply ink or water color to produce a brilliant and sparkling result with ink, or clear and transparent in water color with the full beauty of the pigments brought out by their proper use.

In early work in water color, flat washes are often desirable, especially in decorative compositions where the expression of values is not carried far, but to give the various modifications of form as well, it is desirable to work more directly from the paints, changing and blending as one goes along, and so expressing light, shade, and shadow at the same time. Sometimes it is an advantage to allow one color to run or pool into another, thus giving more atmosphere to a landscape or breaking the hard contour of an object in a group of still life.

Examples of Pencil Painting.

THE STUDY OF COLOR.

It seems well in the fall of the year to give time to color study, for nature is then dressed in her gayest hues. The scales of color from light to dark are then full and rich while the scales from one color to another, as from red to yellow, are unsurpassed.

"A maze of leaves in a rich mosaic,
Brown and yellow and flaming red,
A fringe of gray and a sweep of yellow
Crimson streaks and a belt of brown,
Mingled in with the sunshine mellow
And sun-tinged leaves soft floating down."

— ERNEST MCGAFFEY.

If any one were asked to tell the three most distinctive colors, undoubtedly the reply would be, **yellow, red, and blue**; for these colors do not at all partake of each other's color-nature. Therefore, the first color study is of *yellow, red, and blue*, to be sought in flowers, leaves, and fruit, in plumage, and in the sky, in fabrics, in decoration, and in pottery. Hannah Parker Kimball has made a yellow, red, and blue study in her little poem called "Sun, Cardinal, and Corn Flowers."

"Whence gets earth her gold for thee,
O Sunflower?
Her woven, yellow locks so fine
Must go to make that gold of thine.

"And whence thy red beside the stream,
O Cardinal-flower?
She pricks some vein lies near the heart
That thy rich, ruddy hues may start.

"And whence thy blue amid the corn,
O Corn-flower?
Her deep-blue eyes gleam out in glee,
The glories of her work to see."

The three colors that follow yellow, red, and blue are those that each partake of the nature of two of the first.

"Saffron and sapphire and red
Waved aloft to their sisters below."

— GEORGE MEREDITH.

Thus **orange** inclines to yellow and to red; **green** inclines to yellow and to blue, and **violet** inclines to red and to blue, as J. G. Holland says:

"To atmospheres of red and blue
That blent in violet aureole."

Seeking the relationship of these six colors, they arrange themselves as Red, Orange, Yellow, Green, Blue, Violet:

"First the flaming red
Sprang vivid forth; the tawny orange next,
And next delicious yellow; by whose side
Fell the kind beams of all-refreshing green.
Then the pure blue that swells autumnal skies,
Ethereal play'd; . . .
While the last gleamings of refracted light
Died in the fainting violet away."

— JAMES THOMSON.

After these come colors of still closer relationship which bear double names showing whence they spring: **red orange, yellow orange, yellow green, blue green, blue violet, red violet.** These colors are called **intermediate colors** and arrange themselves readily with the six leading colors mentioned above so that there will be a color unit of 12 colors. These colors are frequently mentioned by their symbols — the initial letters of their names, thus R, RO, O, YO, Y, YG, G, BG, B, BV, V, RV, showing a continuous flow of color. If the colors of this unit be considered as arranged in a circle instead of a straight line, the flow will be continuous around the circle; for the red violet at the end of the line is closely related to the red at the beginning of the line, which it would meet were the line made a circle.

Pupils should gain their ideas of the standards of these colors, and their tints and shades, from colored paper. At this stage of the work pupils should have become quite familiar with the six leading colors, the six intermediate and their tints and shades. It will be remembered that the various degrees of a color, from light to dark, are called **tones**, the tones lighter than the normal (the full, pure state of a color) being called **tints**, and the tones darker than the normal being called **shades**. A color and its tints and shades — the tints placed above the normal and the shades below — form a scale. It is very interesting, as well as admirable color

training for pupils, to form these color scales first in colored paper, and then in bits of textiles, or to select a beautiful colored object — as a feather, a spray of leaves, a flower — and discover the scales of color in the object, and reproduce those scales in colored paper.

Each strong individual color should, however, have its special study. Color days or color weeks, in which one particular color rules, or days in which yellow, red and blue, or orange, green, and violet prevail, are a special delight to pupils, while at the same time their color perception is being strengthened. On such color days (it may be an orange day) there would appear on the cabinet a bit of orange pottery, girls would wear an orange bow and boys an orange tie, coreopsis and other brilliant orange flowers — nasturtiums show the tints and shades in a wonderful way — would be placed on the teacher's desk, and some oranges near by might finish the scheme. The pupils' work would be in borders of orange, in scales of orange, and in harmonious arrangements.

In the fourth year **broken colors** were introduced in the regular order of color study, for the shades of the six leading colors were given. The shades of color, as well as the different grays, are *broken colors*. In the fifth year broken colors were studied still further in the shades of the intermediate colors. In the sixth year a special study of grays is introduced. These grays range themselves readily under the color names already given. They are **red gray, orange gray, yellow gray, green gray, blue gray, violet gray.** These take various names in literature, red gray being frequently spoken of as russet.

"When her fragrant fruit the orchard shed,
They helped to gather the apples spread
On the soft grass, — yellow, russet, red."

— PHŒBE CARY.

Orange gray is very well known by its familiar name of brown. If you study the color in the "great ripe nuts, kissed brown by the July sun," you will feel the yellow and red and gray.

"Yellow and red were the apples,
And the ripe pears russet brown;
And the peaches had stolen blushes
From the girls who shook them down."

— JOHN G. WHITTIER.

Yellow gray has also the name of citrine. Yellow has so much the color of light and of the glint of gold that it is often expressed by gold.

"This lovely mountain-side,
In faintest purple dyed,
And golden gray."
— EDMUND GOSSE.

Green gray is the same as olive. The color, in its tints, is like that of the leaves of the olive tree and of the poplar.

"Hard by a poplar shook alway,
All silver green with gnarléd bark."
— ALFRED TENNYSON.

Blue gray is frequently called slate color, a name used largely in connection with fabrics.

"Down through the blue gray thyme, which roofs their courses with odor,
Rivulets, gentle as words from the lips of beauty, are flowing."
— LORD HOUGHTON.

And finally, violet gray may be expressed by heliotrope, although heliotrope is perhaps slightly redder than violet gray. A most beautiful transition of color through the day is given in the poem "Day and Night."

"From gray of dusk, the veils unfold
To pearl and amethyst and gold —
Thus is the new day woven and spun:

From glory of blue to rainbow-spray,
From sunset gold to violet gray —
Thus is the restful night re-won."
— FIONA MACLEOD.

Scales of these grays from lighter to darker should be made in colored paper for the purpose of developing clear color perception.[1] They may also be studied in nature, in fabrics, and in pottery. Chords of color, studied from nature, may be carried out in colored paper. The figures in historic ornament and in design may also be carried out in colored paper, as suggested in the several exercises on these subjects through this Manual.

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[1] See the color manual "Suggestions for Instruction in Color." Published by The Prang Educational Company. The references to drawing-book pages in the color manual do not apply to the books of the Elementary course.

With the growing introduction of water-color into the schools, there is opportunity for enlarging the field of color work. Colored paper furnishes standards of color to be studied and arranged for the development of color perception and color expression; the providing of water-colors as school material adds another means of color expression, which is most responsive.

Water-colors may be used for work in Representation, in Composition of color harmonies and of landscape, and in Decoration.[1] See **How to Use Water-Colors**, page 62. In water-color, the use of three colors only — yellow, red, and blue — has much greater educational possibilities, develops more individual power and gives finer results in a direct way than the use of a greater number of colors. See **Water-Colors**, page 61.

The printed water-color outlines of historic units furnish a remarkable opportunity for color composition. As the outlines are all ready, the pupil can give himself wholly to his expression of color harmony. See **Blotted Washes**, page 64.

Fine Thought. — The Color Manual furnishes suggestions concerning the various colors and tones to be used in this year and the method of study, together with poetical quotations to enhance the delight of color study. Other quotations are added here.

Red. — The children will be eager to continue their search for references to color and will seek for examples in descriptions of flowers.

> "O poppies in the meadow, red and red
> And red and red through all the ripening corn."
> — EDWARD C. LEFROY.

They will also be delighted if successful in finding some suggestion of the shades of red. The wild tulip is a dark red.

> "Mid the sharp, short emerald wheat, scarce risen three fingers well,
> The wild tulip at the end of its tube, blows out its great red bell."
> — ROBERT BROWNING.

Orange. — Once known it is impossible to mistake this brilliant color, or to pass it by unnoticed. It makes its glowing presence known in many gay blossoms

[1] Mr. Ross Turner gives valuable suggestions in his "Handbook to accompany a color scheme for the kindergarten." Published by The Prang Educational Company.

and berries, and gives a hint of its beauty in bird and butterfly, in the dazzling tones of sunset, and the changing hues of the fire. Lowell tells of the oriole

"Cheering his labor with a note
Rich as the orange of his throat."

of the

"Gold of the reddening sunset."

and that

"Here dozed a fire of beechen logs, that bred
Strange fancies in its embers golden-red."

These quotations seem particularly apt when we think how yellow and red, playing together, make orange. And then there is in the bitter-sweet the presence of the two colors.

"Now overhead,
Where the rivulet loiters and stops,
The bitter-sweet hangs from the tops
Of the alders and cherries
Its bunches of beautiful berries,
Orange and red."

— ARCHIBALD LAMPMAN.

Yellow. — The gay tones of yellow are described in many a pleasant verse:

"Upon the lawn lie floods of yellow light,
And yellow puff balls, downy, soft and round,
The dandelions, make the greensward bright;
Upon the lawn lie floods of yellow light.
Above are yellow buttercups in flight,
Gay sparks of light that flicker from the ground;
Upon the lawn lie floods of yellow light,
And yellow puff balls, downy, soft and round."

— HANNAH PARKER KIMBALL.

And the yellow is very likely to pass into yellow green as in the lines just quoted. This fresh delicate color is an emblem of springtime.

"Sweet grows the world to-day and fair,
Seen through the Springtime's lovely sheen, —
A tender mist of golden-green
That veils the earth and fills the air."

— HARRIET MCEWEN KIMBALL.

Green. — The search for reference to color in literature is an unconscious training in color discrimination. The children cannot fail to feel the quality of this color, —

"For green is to the eye, what to the ear is harmony, or to the smell the rose."

The pupils will also like some reference to the shades and to the variations in hue: —

"Behind the mowers, on the amber air,
A dark green beech-wood rises still and fair,
A white path winding up it like a stair."

— EDMUND GOSSE.

"In spring they lie one broad expanse of green,
O'er which the light winds run with glimmering feet;
Here, yellower strips track out the creek unseen,
There, darker growths o'er hidden ditches meet;
And purple stains show where the blossoms crowd,
As if the silent shadows of a cloud
Hung there becalmed, with the next breath to fleet."

— JAMES RUSSELL LOWELL.

Blue and Violet. — The children may make special search for references to the tones of blue and of violet.

"The daisy, primrose, violets darkly blue,
And polyanthus of unnumbered dyes."

— JAMES THOMSON.

"And Canterbury bells a-swinging,
Dim blue like bits of April sky."

— ROSE TERRY COOKE.

"Far in the west sinks down the sun
On bars of violet and gold."

— LEWIS MORRIS.

They will be doubly delighted if they can find reference to two colors in association, or playing one into the other, as blue into green, or into violet.

"Where, like a shoaling sea, the lovely blue
Played into green."

"Turkoise, in blue stars set, with Iolite,
That violet-tinted gem which somewhile hides
In Indian hills. Azures and purples bright
Play daintily across its sparkling sides."

— EDWIN ARNOLD.

BOOK 7, PAGE 5. SIXTH YEAR BOOK, PAGE 5.

REPRESENTATION.

NATURE.—Trees. Form. Life and Growth.
ART.—Selection. Choice of Aspect. Rendering.

[The pupil sketches trees, studies the examples given on the drawing-book page for suggestions as to rendering, chooses a tree and studies its most beautiful aspect, and draws it in the book, expressing the characteristics of the tree and seeking for beauty in the rendering.]

Tree Structure. — Before starting on this page, lead the pupils to see that the structure of a tree is shown in the trunk, branches, and stems, which are clothed with foliage, just as the bones and muscles in men and animals are covered with flesh.

Young firs of various kinds often have their lower branches very near or touching the ground. The limbs of the oak, apple, and elm divide early from the trunk, and are generally massive. The maple and forest pine usually branch high upon the trunk. Trees like the elm, ash, walnut, and chestnut are similar in the general effect of the foliage, though varying in form. The apple tree in trunk and branches is much like a gnarled and stunted oak. It seldom rises above the buildings near which it is planted, but spreads its branches to a considerable distance over the ground. The bark of most fruit trees is rougher and darker than that of forest trees, with the exception of that of the cherry, which is ligher and smoother, something like the birch. The willow often grows beside streams or in wet places by the roadside. It is a tree beloved by the artist as its tender green gives great beauty and charm to a spring landscape and when it is old it has a tendency to divide in the trunk, forming all kinds of picturesque angles.

"As the oak is the Hercules of the trees so the ash may be called the Venus." The ash is inferior to none in height, gracefulness of form, or elegance of foliage. Though seen everywhere, its favorite haunt is the mountain stream, where its branches hang gracefully over the water, adding much to the beauty of the scene. The shape of leaves is not visible in shadow or in the mass of foliage when a tree is far distant. A tree in the foreground will show its character in its general form, the growth and disposition of branches, and appearance of its outline against the sky or other objects; it will depend upon its position and relation to its surroundings as to the amount of detail to be expressed.

The structure and habits of trees have been a favorite theme for poets and writers of all ages.

"Mine be a cot beside the hill;
A beehive's hum shall soothe my ear;
A willowy brook, that turns a mill,
With many a fall shall linger here." — SAMUEL ROGERS.

"These green-robed senators of mighty woods,
Tall oaks, branch-charmed by the earnest stars,
Dream, and so dream all night without a stir." — JOHN KEATS.

"Amid the brook
Gray as the stone to which it clung, half root,
Half trunk, the young ash rises from the rock;
And there the parent lifts its lofty head,
And spreads its graceful boughs; the passing wind
With twinkling motion lifts the silent leaves
And shakes its rattling tufts." — ROBERT SOUTHEY.

"Who liveth by the rugged pine
Foundeth a heroic line." — RALPH WALDO EMERSON.

For treatment in pencil no special touch or stroke can be recommended for the foliage of different trees, as that must be largely the result of attention, study, and individual feeling.

Trees which are irregular in form are usually the most effective, — as an old, stumpy, and hollow willow, with scant and shaggy foliage which is, notwithstanding its shattered condition, very picturesque. Corot was especially fond of old willows, and rendered them with a peculiar spiritual beauty. Daubigny made good use of tall poplars to give points of accent to his landscapes and relieve the monotony of the composition, while Diaz treated the deep forests something as Rembrandt did a group of figures, by concentrating the light in one place, thus increasing the pervading gloom.

Suggestions for the Lesson. — If Drawing-book 7, page 5, is to be drawn upon at a time of year when the pupils can go out of doors to sketch, a preliminary study could be made from nature, involving one or more trees, and later might be carried out in the drawing-book. If out-of-door sketching is not practicable, it might be well for the pupils to copy page 4 or a part of it, as it shows the individual characteristics of various trees. If a part, then the placing upon the page should be a feature of the lesson, so that the effect will be good as a whole. If an individual tree is

copied, then a slight suggestion of distance may be added. A good composition could be made by having the oaks, for example, in the middle distance, massing them simply as on page 4 and adding a bit of roadway, stones, etc., for the foreground, or perhaps a fence. Lead the pupils to realize that we do not see directly all the details of a landscape when we look at it, some parts are out of focus and simply serve as accessories to the object or objects of chief interest. If the trees are used as a part of one or more compositions, a "finder" will be useful to determine the best size and placing upon the paper. A finder may be made by cutting an opening out of stiff cardboard, generally an oblong, and holding it between the eye and the object or scene to be studied. It is well to have several sizes with different shaped openings, as oblongs of different proportions. They are very practical helps to good composition.

Should both near and distant trees be drawn, the effect of distance can be obtained by a lighter and less distinct treatment. Lowell gives a suggestion for the treatment of the distant pine in color.

> "Far up on Katahdin thou towerest
> Purple-blue with the distance and vast."
>
> — JAMES RUSSELL LOWELL.

Drawing (either with brush or pencil) need not, by necessity, always be from nature. Because copying is sometimes lifeless and meaningless, it does not prove that it has no value. Let us use a variety of ways to promote art culture, and guard ourselves against too great devotion to any one way. A good copy carefully studied with an effort to catch the spirit of the original, is sometimes of far more value than a crude and hasty drawing directly from nature.

"Nothing could be more interesting than a summary of the different ways in which different artists have accomplished their ends; how some have painted their masterpieces out in the open air, while others have done their work in the seclusion of a studio and from notes remarkable in their brevity. That Corot did most of his work out of doors is an astonishing fact; that a style so severe should have been developed under circumstances so disturbing seems almost miraculous; yet so it was. The advantage of the two methods depends entirely on temperament. The placid and unexcitable person may work where he likes, whilst he of nervous temperament must work where he can." — ARTHUR TOMSON.

Connection with other Studies. — The study of trees for artistic rendering may be correlated with botany and with manual training. For example — in the fall a certain tree may be studied, taking its seeds, fruit or nut, its root, bark, manner of branching, buds, leaves, color they turn, when the buds form and how they go

through the winter, etc. The children go out and observe the tree (perhaps find out what creatures inhabit the tree). In connection with manual training they study the character of the wood, compare it with other woods, and consider its industrial use.

Not only literature but history has much of interest concerning trees. Among historic trees may be mentioned: —

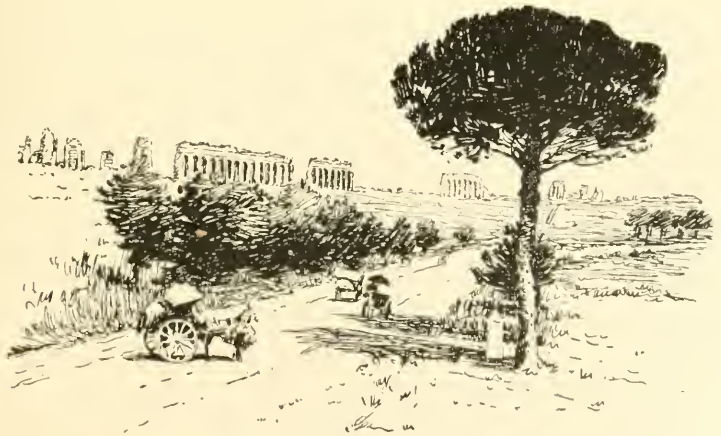
The Charter Oak at Hartford, Conn., in which Captain James Wadsworth concealed the State Charter to prevent its resumption by Geo. Edward Andros in 1687. This tree was blown down August, 1856.

The Washington Elm at Cambridge Common, Mass., under which George Washington assumed command of the American army in 1775.

A celebrated willow overshadowing the tomb of Napoleon at St. Helena. Slips from this tree, from time to time, have been sent to all parts of the world.

Such a tree might be taken for a subject, the details looked up from various sources and a composition or abstract written, which might be very simply illustrated.

All such work would tend to cultivate a student attitude of mind, develop greater power of observation, and more feeling and interest would naturally be put into art expression. Care must be taken, however, not to absorb the time appointed for definite art training in such study, valuable as it may be.



BOOK 7, PAGE 6. SIXTH YEAR BOOK, PAGE 6.

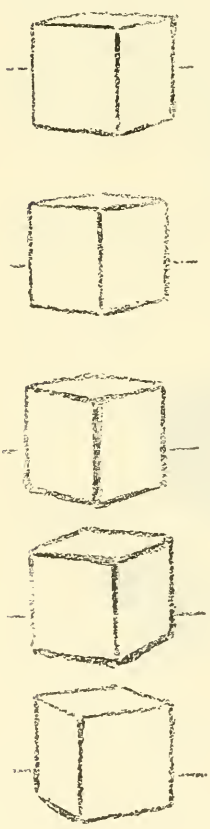
REPRESENTATION.

TYPE SOLIDS. — Cube. Square Prism. Appearance. Proportion. Convergence. Foreshortening.

ART. — Position of Models. Rendering.

[The pupil sketches the cube and square prism turned in various ways, studies thoughtfully for the principles of perspective involved in the appearance, and draws in the book, striving for truth of representation and for beauty in rendering.]

Elements of Perspective. — In pictorial expression, whatever the interest in arrangement, color, or light and shade may be, good drawing, or a true regard for the appearance of objects, must always stand as a necessary factor. Up to this time the pupils have expressed their ideas of the appearance of type forms freely, putting down their impressions of the objects as seen. It seems well now to lead the pupils to a more definite study of the principles underlying the pictorial representation of objects, so that, by comparison and reasoning, the drawing of a large class of objects may be comprehended with as much ease as the drawing of a single object, and the habit of correct drawing be formed.



They are now old enough to discuss and study seriously some of these leading principles, such as the convergence of lines and the foreshortening of planes. By so doing they will apply the principles of perspective to model and object drawing. Owing to their simplicity of structure, type solids are the best of objects for such study. They can be invested with interest by calling the attention of the pupils to the underlying construction of buildings. One with towers may suggest the square or the hexagonal prism.

Some artists seem to have a feeling that perspective being an exact science, any particular knowledge of it may injure the æsthetic feeling, yet a lack of understanding in this direction often causes a drawing to be inaccurate and misleading, when the execution is otherwise acceptable. It is not necessary to enter into an exhaustive study of scientific perspective, interesting as it might be, in order to grasp some of the important principles. A lack of some knowledge in this direction is often the cause of perplexity and embarrassment.

It is no uncommon thing in a studio abroad for an artist to call to his aid a professional expert who tests and corrects the leading lines of the picture which he has just begun. If the underlying principles of perspective and the foreshortening of objects were understood by the artist, this would not be necessary.

Many illustrations in current books and magazines are very faulty in perspective from the failure to understand and apply a few simple principles. Who has not seen the floor of a room drawn with such violently converging lines that it looked like an inclined plane which it would be necessary to climb rather than to walk comfortably upon? It is necessary to be careful when taking a position to draw an exterior or interior of a building not to be too near the part to be drawn as in that case the leading lines will appear unnatural and in too violent perspective. Such an effect may be observed in some photographs of buildings when the position of the camera has by necessity been too near, thus distorting the perspective.

Some of these principles are discussed more fully in the Appendix.

The Exercise. — On this page there may be drawn a square prism vertical or horizontal, or a cube in one or more positions, or a sphere on a cube turned. If the sphere is placed upon the cube, it may be held in place by resting it upon a small brass button ring. The model may be above or below the eye and should be placed so as to make angles to the left and right. If one large drawing is made, as large as will look well in the space upon the drawing-book page, let the line be free and transparent. Whether the drawing be of a model or of an object, try to have it a lesson in seeing.

"I am impressed with the fact that the greatest thing a human soul ever does in this world is to SEE something, and tell what it saw in a plain way. Hundreds of people can talk for one who can think, but thousands can think for one who can SEE. To see clearly is poetry, prophecy, and religion — all in one." — JOHN RUSKIN.

If the principles involved seem to be well understood, and can be proved by having the class make a few quick sketches upon paper as preliminary practice, then a line drawing of a chimney with perhaps a few leading lines of the roof, or the top of a square tower or cupola may be placed on the drawing-book page. The underlying type may be used as a "thumb-nail" sketch in the upper corner. As an object slightly below, or very near the level of the eye, a gate post and a part of a wall may prove to be an interesting subject and a good illustration of principles.

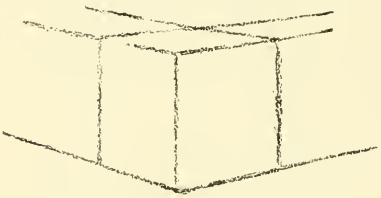
Whatever the object chosen let the treatment be very simple and carried out in line, not too rigid, but careful in drawing. Let nothing obscure the truth of construction in the object drawn. Faults of construction in a drawing are often partly

or wholly concealed under an attractive treatment of light and shade or color, just as some pottery or porcelain may be attractive in its decoration, but poor and unworthy in form. The following quotation is suggestive in this connection.

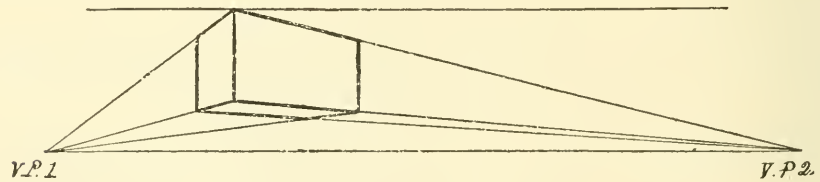
"People will not realize sufficiently this absolute truth — as it seems to me — that art is not a condition designed to cover the defects of the dish that has failed."

— GABRIEL MOUREY.

Lead the pupil to see that all parallel horizontal edges when seen above the eye should be drawn as though converging downward to a point on a level with the eye,



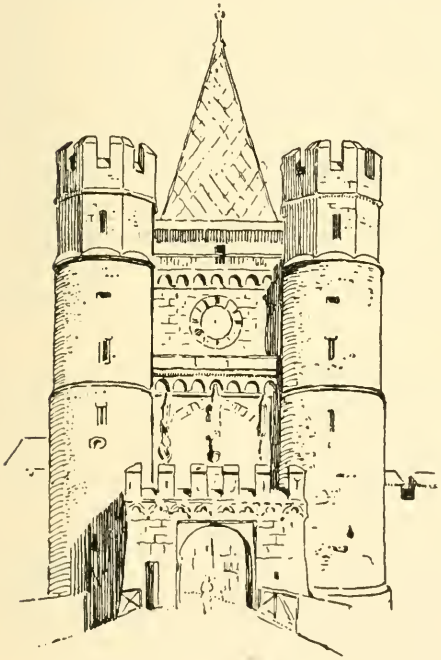
and that all lines below the eye (when expressing parallel edges) should appear to converge upward to a point on the level of the eye. Such points cannot be placed upon the paper without making the drawing too small or the perspective too violent, but must be imagined. Notice in the illustration of the cube that the vertical sides are contained in planes which gradually grow less in height as they vanish or converge toward the level of the eye. The distance from the front edge of the cube to the farther edges appears less than the height of the nearest edge, showing that the sides of the cube are foreshortened because turned from the eye. The top of the cube does not appear as a square, but, if not far below the eye, seems very much foreshortened.



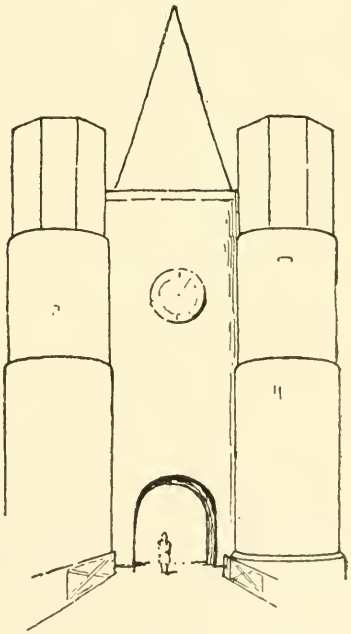
One fact must be well kept in mind by teacher and pupils, and that is that objects appear unnatural and distorted in perspective if viewed either too far above, too far below, or too near the eye. For that reason it is desirable that objects should not be placed too low nor pupils seated too near them. Another advantage secured by having sufficient distance from the eye is that small details are lost. There is much significance in the remark of an artist to his pupil who said she saw certain unimportant details. "Sit farther back, you see too much."

Art expression is in a way analogous to life, we lose breadth of view if we make too much of non-essentials.

The Examples. — The illustrations upon the drawing-book page should be commented upon, first getting the thought of the pupils. They may be led to see and explain the application of perspective principles to them. One is a part of a stone wall, the other a fragment from an Egyptian temple at Denderah, nearly buried in sand, and seen partly above the eye. The wall is built of type forms and clothed with the vine. So the architect and the Egyptian build with types and clothe these types with decorative lines — with curving cornice, with flowering capital — and with divided architrave for the beauty of such division.



THE OLD GATE OF BASLE.



THE UNDERLYING TYPE FORMS.

BOOK 7, PAGE 7. SIXTH YEAR BOOK, PAGE 7.

REPRESENTATION.

FAMILIAR OBJECTS. — Form. Appearance.
ART. — Selection. Arrangement. Choice of Aspect. Rendering.

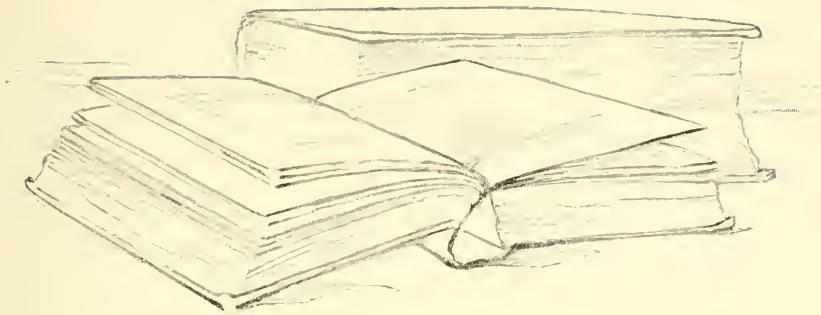
[The pupil arranges familiar objects, singly or in groups, striving for good composition, makes sketches, chooses an object or a group, studies its most beautiful aspect, and draws it in the book, making application of the principles discovered in the preceding exercise, and seeking for beauty of relationship and rendering.]

Application of Principles. — As the object of this exercise is, in a large degree, to apply the principles learned in the preceding lesson, the greater the variety and number of sketches showing a power to express convergence, foreshortening, and proportion, the better. Encourage the pupils to sketch interesting bits of furniture or groups of books at home, illustrating the convergence of lines, without finish or detail. Lead them to criticise these from the point of view of the preceding lesson, and to correct them. The carrying out of the perspective principles involved in such sketches would help greatly toward correct drawing in school, either from the object or from one of the sketches selected and placed upon the drawing-book page.

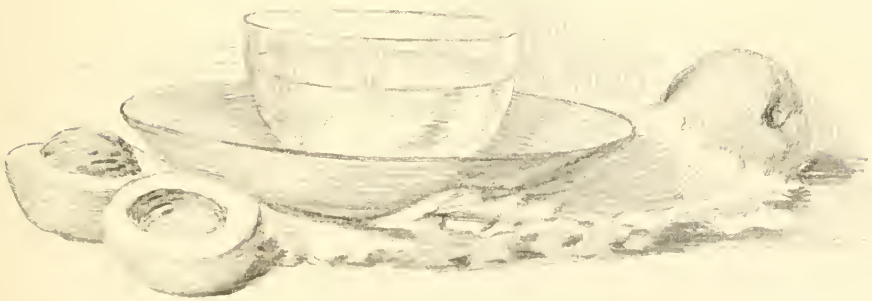
Objects to be drawn and Methods. — Books are always available in the schoolroom, and interesting groups can be made with them. They should be arranged at an angle and slightly below the eye. The pupils should study to find the best point of view. Avoid an arrangement exactly like the illustration on the drawing-book page.

For the exercise the pupils will need no practice paper this time, but may sketch very lightly the leading lines directly on the drawing-book page, holding the pencil from time to time between the eye and the group in order to see more clearly the direction of the converging lines. It would be desirable to render in outline, accenting those parts that are nearest the eye or that seem to call for emphasis. Any details upon the back or sides of the books should be made little of, and the group should not be near enough to the eye for lettering or ornament to be distinctly legible or definite. A few suggestive touches for such details where the pupil feels that they should be placed will be sufficient.

Color has its value as a means of art training, light and shade may help to the expression of beauty which the pupil sees and feels, but the most useful method for the practical needs of life is the power to draw correctly and effectively in line.



Books. — Edith Clark.



Still Life. — Edith Clark.

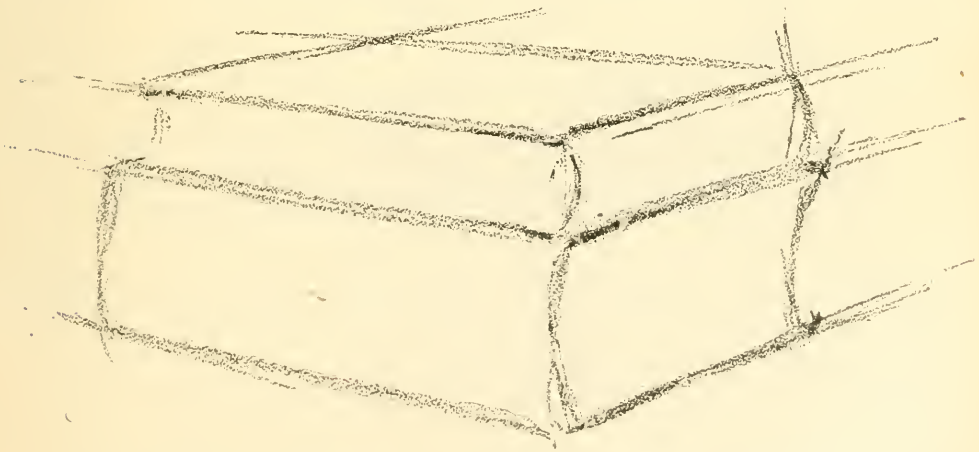
The value of line is especially recognized by artists, as they realize in their own work the power of line.

"Remember always, form before color and outline, silhouette before modeling; not because these latter are of less importance, but because they can't be right if the first are wrong." — WILLIAM MORRIS.

The treatment of line upon the drawing-book page is an excellent example for the pupils to study. The objects are simply rendered and the quality of the line is free and transparent. It is not continuous but broken in places, thus helping to express texture.

"Could not a little sermon be preached upon the saving grace of a return to line? A text might be taken enforcing the reticence of workmanship, economy, and expressiveness of 'line.' Your excellent young men know something of Forain, as they know Phil May. The Japanese they will receive gladly. I should like to take them into other worlds as well. For when you insist upon the expressiveness of 'line' and the economical use of it, you insist practically upon the value of a quality recognized not only by the modern Frenchman and the Japanese, but the property rather of nearly all great artists, from the days when, in whatever land, pictorial art first became mature." — FREDERICK WEDMORE.

Lead the pupils to observe carefully the covers of books, and to notice that they project beyond the leaves. Unless a book is very old and loose in the binding, the

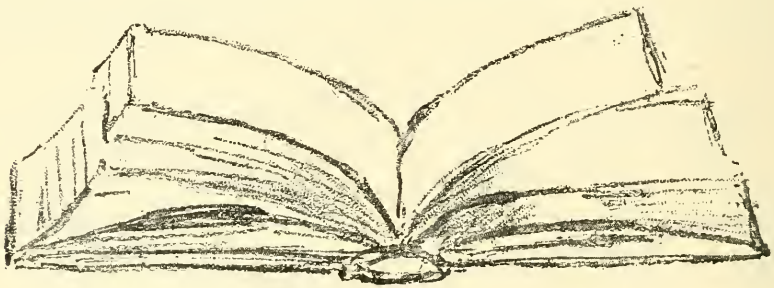


corners of the upper covers will be directly above those of the lower cover at whatever angle the book may be placed. An open book resting against other books

makes an interesting group. Be careful that the books are not placed too far below the eye, and that the pupils do not sit so near as to see too much detail. A drawing of a book by a pupil of the sixth year in school is reproduced on a smaller scale below.

A simple table is a good object from which to draw and to illustrate the convergence of lines. Like the books, it should be placed at an angle with the eye. If chairs are chosen, then they should be plain in construction, — the old-fashioned rush bottom (similar to the illustration) being the best. If possible, place chairs at the forward end of each aisle, resting on the floor or platform, and turned at an angle. If there is a hall or general assembly room in the school building in which there are movable chairs or settees, a hollow circle or square might be formed, with one or more chairs for study placed within. Such an arrangement gives every pupil a different point of view and unobstructed vision.

Let each child decide where the drawing will look best upon the page, and how large it will be. There should be more thinking than talking, either by the teacher or pupils. In all such exercises awaken as much interest as possible in the children, that the drawings may show feeling and artistic quality, even if imperfectly expressed. The objects in "The Angelus," on page 2 of the drawing-book, though kept subordinate, are drawn carefully, and with much feeling.



Historic Associations. — Chairs, indeed many objects in furniture, even have historic value. At Plymouth, Mass., there are a great many household objects of interest connected with the Pilgrim Fathers. In Boston (Old South Church), at Philadelphia (Independence Hall), and in various places in this country, there are pieces of furniture — such as chairs, tables, etc. — associated with colonial and revolutionary times. The first governor of Massachusetts, John Carver, who sailed from Plymouth, England, in the *Mayflower*, August, 1620, brought over a chair — which was one of his best articles of furniture, and yet was very simple in construction — very similar to the one upon the drawing-book page, only with arms and a rush

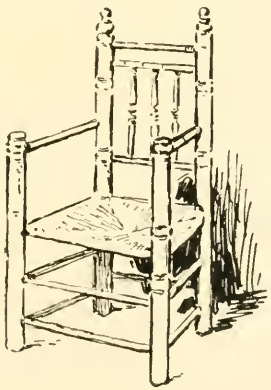
bottom. How forcibly does such an example show the simplicity of taste of that period! Straight-backed chairs seem to be associated with dignified, simple, and old-fashioned manners.

Coronation and altar chairs are of interest, both in form and association, and there are many fine examples in the museums and churches abroad. Very ancient furniture is of great solidity, and this is probably largely due to the fact that the first carpenters were carvers rather than experts in the use of the saw and the plane, because in the earlier states of culture we always find that hollow objects — such as canoes, boxes, drinking-vessels, drums, etc. — were dug out of one solid log of wood instead of being put together in several pieces. Later, when parts of furniture, especially chairs, were worked out by hand, they were put together with wooden pegs, which were so firmly wedged as to become almost a part of the chair itself.

If there are any historic chairs in the vicinity, perhaps they could be borrowed for the pupils to draw from. Some of the pupils may have suitable chairs at home that they would like to bring for the lesson, or a local furniture dealer may be willing to send some examples. The public will often respond readily if taken into confidence and personally appealed to. Home sketches might be made of chairs having personal significance to the individual pupils.

"I love it, I love it, and who shall dare
To chide me for loving that old arm chair?"

— Eliza Cook.



John Carver's Chair.

BOOK 7, PAGE 8. SIXTH YEAR BOOK, PAGE 8.

REPRESENTATION.

NATURE. — Figure Studies. Action. Proportion.

ART. — The Pose. Choice of Aspect. Rendering.

[The pupil makes sketches of a figure posing, expressing the general characteristics, and omitting detail, makes thoughtful criticism of the work, comparing it with the model, and draws in the drawing-book from the pose, studying the examples for suggestions as to rendering.]

The Example. — This illustration appeals to us for its imaginative quality. Perhaps it is a Puritan maiden standing near the sea and thinking of her English home. The dreamy expression of the face shows that her thoughts are far away.

Subordination of Detail. — The rendering of the figure is only light and dark, while the fence upon which she leans is treated without special accent or detail, and thus becomes accessory to the figure. This subordination of details to the centre of interest often makes the difference between a work of art and a literal copy of nature. On page 1 of the drawing-book observe that Millet subordinated everything to the thought to be expressed. He shows the ploughed ground, but the clods of earth are not prominent. The barrow, basket, and hoe are not obtrusive. The eye and thought concentrate upon the figures and the distant spires. It will be interesting also to study the figures by La Farge on page 2 of the drawing-book.

A pupil of Hunt's took note of some of his remarks and advice to his students, and published them under the title of *Talks on Art*, from which the following quotation is taken: —

"When Browning describes the ocean or a movement he simply swings an adverb that tells the whole story. When Michel Angelo used details he knew what he was about. If people would finish their large masses they would see that the details generally find themselves completed. If you are drawing an eye, draw the whole mass carefully. To draw a nostril, look well to the attachment of the nose to the cheek and the outline of the nostril, and the nostril is done. But you make details like drawing currants on a slice of cake."

— WILLIAM M. HUNT.

Method of Procedure. — If it is feared that the pupils do not see a figure sufficiently in mass, it might be well, after studying the illustration in the drawing-book very thoughtfully, for them to copy it upon practice paper, considering only the entire mass, and rendering the figure in silhouette with ink. This would be a good preparation for the study from life to be placed upon the drawing-book page, as they

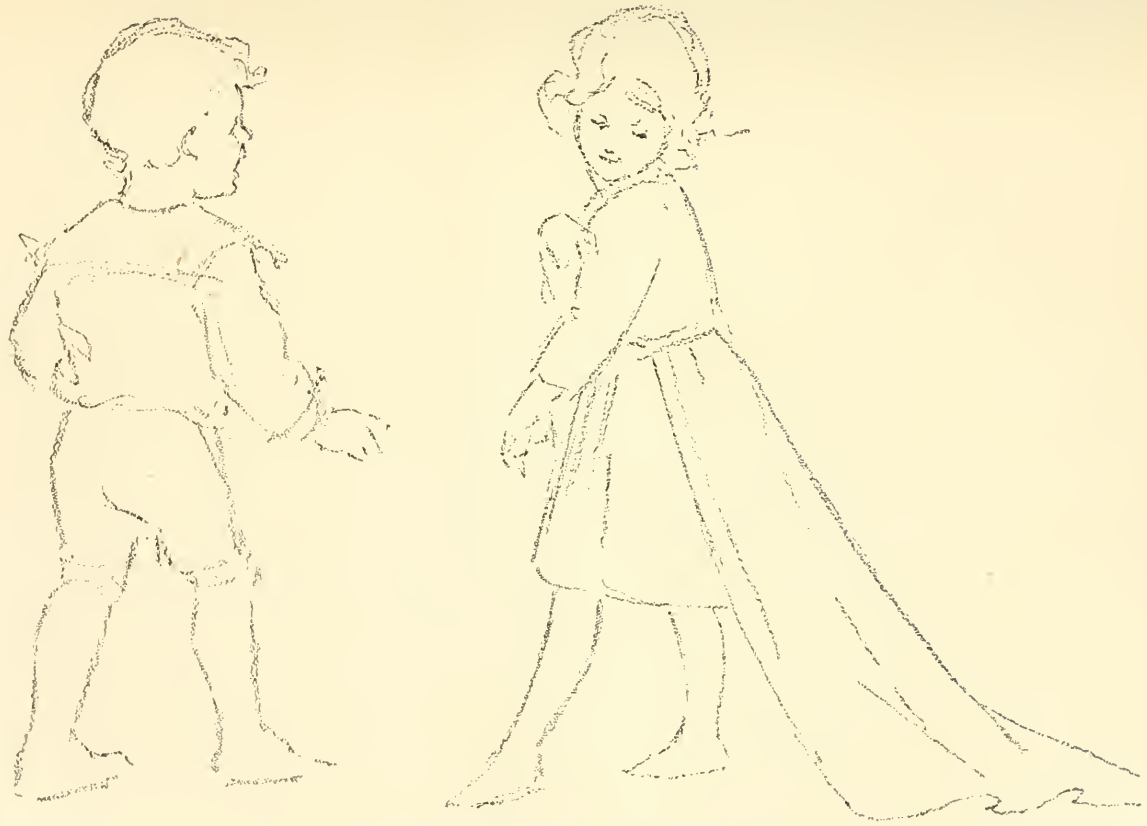
would by necessity be led away from small details in trying to see the truths of action, mass, and proportion. It would help them to discriminate between essentials and non-essentials, so that later, when the drawing in the book is made, the pupils would not put in meaningless lines. A well-proportioned silhouette, full of action and life, makes a very effective drawing.

Ask the pupils if they ever saw an "old-time" silhouette which was usually only the head and shoulders cut from black paper, mounted upon white. These were in vogue before the days of photography, and some of the likenesses cut in such a way were very remarkable.

"It is an excellent plan to represent the figure in silhouette with ink as a preliminary to drawing in outline. We do not really see things in outline but in the mass, but outline is an accepted symbol, a language which everyone recognizes as standing for something really very different. A sphere we know to be solid and round, yet we are satisfied to have it represented by a circle without light and shade. We see the human body as a solid body, consisting of many surfaces of light and dark, yet we know these may be represented in outline and give an intelligent idea to the observer."

—"Talks to a Beginner," *The Art Student*.

Encourage the pupils to make mental notes, as well as pencil sketches, of the leading lines of some characteristic figure, and to try later to produce it from memory. A street or steam car may furnish interesting motives. A baseball or a football game gives an excellent opportunity to study action, and to observe the leading lines of the figure in different positions. The pupils will see that such violent action is dependent upon the angles the limbs make. A small sketch-book or a pad of paper suitable for pencil work will prove valuable as a help to memory work, and as a means to secure still more thoughtful and careful study of the figure than the time in the schoolroom allows. Encourage sketching at home from life, and to keep from over-elaboration of details suggest that it be done in silhouette or light and dark. The silhouette, with brush and ink, would express the entire mass of the figure, while in working in light and dark there may be some variation and a slight division into parts by using the full strength of the ink for the main part of the figure,



Sketches of Children. — Lucy Fitch Perkins.

and ink slightly diluted with water for the other parts. One wash may be prevented from running into another by leaving a slight space of paper between the washes; this will also help to define the shape of the parts. This method is admirably illustrated upon page 15 of the drawing-book. Notice the petals of the roses and the tulips, and the spaces which separate the parts. When a form is indicated by masses of light and dark the outline of these masses should first be carefully and lightly drawn with pencil, filling it in afterwards. This is the method employed by most of the artists when working in this way, and the more carefully this outline is made the more fully can the mass be put in, as it will be evident just where it should be placed. Such work is sometimes carried out on tinted paper, using it as a background, with black for all the dark and white paint (Chinese white) for the high lights. Much of the work of Boutet de Monvel (as in his illustrations of Joan of Arc) is carried out in tones of light and dark. Peter Newell employs this method in his humorous sketches in current numbers of *Harper's Magazine.*

Choice of Model. — The dress will not be hard to arrange, but it will be better to secure a young girl of sixteen or eighteen for a model, if possible, rather than one of the pupils in the room, as the proportion of a child's figure is not the same as that of the youth or adult. A nurse's costume is pleasing. The cap, kerchief, and apron can be made from tissue paper very quickly. Perhaps an older sister of one of the pupils will be willing to pose for the class. If it seems necessary to study a girl younger than the sketch upon the drawing-book page suggests, the lesson will prove more interesting if something in the way of costume is attempted, even if not directly along the same lines. A girl in a long waterproof garment, carrying a school satchel, or an umbrella closed or open, and held over the head, will make a characteristic sketch, and, well managed, will not suggest too much detail. A boy holding his cap high above his head as though about to cheer, is an interesting attitude, and gives a good chance to study long leading lines. If the pose is one calling for considerable action the model will need frequent short times to rest, as sustained action in some positions becomes torture, which a manly boy might endure at the expense of his nerves, rather than ask for relief. During the "rests" a good chance occurs for the teacher to give a helping comment here and there, where it seems needed. Care should be exercised not to help too much. Emerson says, "Every brave youth is training to ride and rule his own dragon," and the earnest teacher must beware and not disturb the individuality of each pupil's work.

Underlying Structure. — Nature delights in angularity in her curves, if we may so express it, balancing constantly the most beautiful curves with bits of strong

straight lines. We see this in the trunks and branches of trees, as well as the more subtile construction of the human body. Babies are all curves, with little or no neck, wrists, or ankles; later the relation and proportion of the parts change, and curves modify. The head is much larger, in proportion to the whole figure, in the child than in the adult. Sometimes illustrators overlook this fact, and children are drawn so as to look like little old men and women. A common fault, also, is that of drawing the hands and feet too small, with the curves too round and smooth, and showing no underlying bony structure or suggestion of muscles.

The long leading lines of a figure once obtained, the proportions are easily found and their relation to each other. One line may be corrected by another drawn over it. Discourage erasing, as it easily becomes a pernicious habit. This method of starting will tend to keep the pupils from making too much of minor parts. Artists often use a "plumb-line" as a help to determine the direction of other lines. Such a line is made by tying a weight, usually a piece of lead (like the sinker of a fish line) to a string. This string is held between the eye and the model, the weight dropping near the floor. If the use of such a line is not practicable in the schoolroom, tell the pupils about it, and ask them to compare the angles of the figure with some vertical edge near by, as the edge of a wall or a window.

Suggestions for the Blank Pages in Book 7.

Choice. — Some of the teachers may wish to use the space on all of the pages for progressive work in some particular line, as in out-door sketching, or in flower composition, in which Mr. Dow's Examples, on page 15 of the drawing-book, will be helpful — or for advanced work in decoration, and this will prove especially enjoyable if brush-work is possible. Individual pupils may be permitted to copy some of the work on the illustrative pages. In some instances it may be considered desirable to devote these pages entirely to color work.

For those who desire work definitely laid out for the four pages, the following lines are suggested, to be carried out on the respective pages in the order given.

1. The pose with accessories.
2. Landscape with trees.
3. Berries in composition — brush-work or work in colored paper.
4. Window sketching — roofs or towers.

The Pose with Accessories. — This may be carried out directly from the pose or various sketches having been made of the pose, the drawing may be made from the mental images received. The following poems suggest poses within the reach of the pupils. The first may be easily arranged and brings in the objects already studied on page 7 of the drawing-book.

"Deep in his oaken elbow-chair,
In fur-trimmed gown, the old-world student
Sits toiling with concentrate air,
And earnest underlip protrudent;
Around him, piled on floor and desk,
His open books in wealth unstinted, —
Black letter chronicles grotesque, —
The mellow pages Aldus printed.

"A winter sunbeam warms the pane
Where proudly ramps the lion argent;
Fleshless and grim, an Afric crane
Stands facing, like some spectral sergeant;
Bright-plumaged birds of tropic clime
Lie right and left, a strange collection,
With fruitage of the autumn-time,
The frugal scholar's spare reflection.

"On sill and shelf a dusty bloom,
Sad scandal to industrious Janet;
Dust on the gods from Pharaoh's tomb,
On figured globe and pictured planet;
A dreamful silence holds the house,
Time checks his passage down the ages,
And tempts a greatly-daring mouse
To feast on Pliny's yellowing pages."

— Lord Houghton

The second adds some new elements — the trees familiar, however, through the study for page 5 of the drawing-book — and calls for more thought and more imaginative powers. Two or more pictures can be obtained from this poem: —

"The windows open on the park
Where the tall trees, from glade to glade,
With arching foliage greenly dark,
Bathe all the summer lawns in shade.

"I turn about to rest anew
My head in yonder easy-chair,
When lo! the landscape still I view,
Reflected in the mirror there.

"Idly I smile, as o'er and o'er
Two parks to right and left of me,
Now through the glass, now thro' the door
Repeat each other, tree for tree;

"And, by a pretty sort of chance,
The two young sisters sit apart,
Complete in dainty elegance,
To play the music of Mozart.

"Just as the landscape double seems,
The other's copy each appears,
And the same golden jewel gleams
Repeated in the four small ears.

"Their eyes upon the keys are bent,
So I may scan, as I repose,
The same rose in their tresses blent,
And on each mouth too the same rose.

"And, sometimes, rising from my place,
I steal to the piano near,
And lean upon the ebon case
To see them rather than to hear."

— Selected, *Translation from Coppée.*

Landscape with Trees. — At this time of year it may not be practicable to make out-door sketches. But pupils may be asked to draw from memory or to compose a landscape in which there shall be trees.

"And here's the field with light aglow,
How fresh its boundary lime trees show,
And how its wet leaves trembling shine!
Between their trunks come through to me
The morning sparkles of the sea,
Below the level browsing line."

— JEAN INGELOW.

"Under the open window where they stood
A river ran; green farm-lands lay beyond,
And forests, dark against the dreamy hill."

— LUCY LARCOM.

Landscape Compositions in Ink. — By Pupils of the Sixth Year.

Or the page may be given to sketches of single trees, selecting different kinds to get different characteristics.

"Time is never wasted, listening to the trees;
If to heaven as grandly we arose as these,
Holding toward each other half their kindly grace,
Haply we were worthier of our human place.

"Bending down to meet you on the hillside path,
Birch and oak and maple each his welcome hath;
Each his own fine cadence, his familiar word,
By the ear accustomed, always plainly heard.

"Every tree gives answer to some different mood;
This one helps you, climbing; that for rest is good:
Beckoning friends, companions, sentinels, they are;
Good to live and die with, good to greet afar."

— LUCY LARCOM.

Or the landscape may be carried out in water color.

"An artist one day at his easel stood
And sketched with a pencil free,
The gold of the meadow, the green of the wood,
And the purple and gray of the sea."

— LUCY LARCOM.

Here is a very suggestive verse, to be carried out in broad, simple effects. Flat washes would be very telling.

"The world lies east; how ample, the marsh and the sea and the sky!
A league and a league of marsh-grass, waist-high, broad in the blade,
Green, and all of a height, and unflecked with a light or a shade,
Stretch leisurely off, in a pleasant plain,
To the terminal blue of the main." — SIDNEY LANIER.

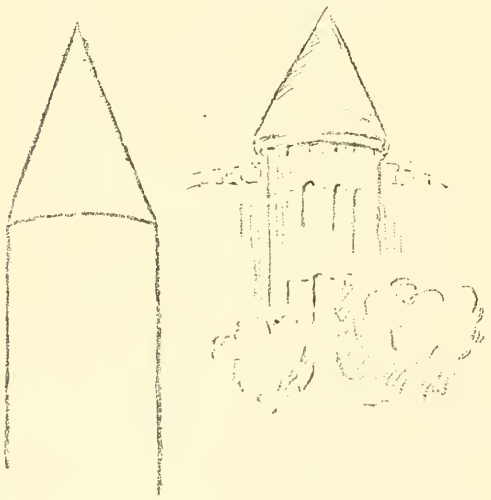
Berries in Composition. — One or two sprays of berries can be arranged in an oblong — vertical if the stem is sturdy and shoots upward — vertical or horizontal according to selection if the growth is flexible. The arrangement should be carefully thought out to secure balance without symmetry. Study the illustrations on page 15 of the drawing-book to see how lines and spaces balance. While a symmetrical arrangement is not desired here, symmetry should be the foundation of the arrangement, for constant thought should be given to the relations of the parts with regard to the centre. The arrangement should be carried out in ink, sharp and

brilliant or with water-color in flat washes, no attempt being made at light and shade.

Work in Colored Paper. — If the page is to be used for colored paper, it would be better not to carry out the work until after the drawing-book pages in historic ornament have been carried out. In the text for those exercises there will be found some suggestions. See also page 95–101 of this manual. Remember that if the opposite page was carried out in water-color, it will not be well to have work in colored paper on this page.

Window Sketching — Roofs or Towers. — A number of sketches of roofs or towers visible from different windows may be made on this page. It is quite surprising how effective a few roofs may be made if treated in the right way. The details should be omitted — only the essentials rendered — simple, strong drawing — not being particular to join all lines at the corners and sometimes leaving out a part of a line, leaving something to the imagination.

If there is nothing to be seen from the window, it will be profitable to have the pupils translate some of the illustrations on page 16 of the drawing-book into simple, outline work. The illustration is from a drawing by a pupil of the sixth year.



"Dropping blossoms yellow,
Crowd fair lindens blooming;
And around stand mellow,
Peaked old houses looming.

"Gables piled together,
Rising high and higher;
Moonlight, this clear weather: —
Then from the church spire,

"Into space out-sweeping,
As the moon shines clearer,
Myriad bats are keeping
Revels queer and queerer.

"Whirling in strange manner
From this Christian steeple,
Worshipping Diana,
Scandalizing people!"

— HANNAH PARKER KIMBALL

BOOK 7, PAGE 9. SIXTH YEAR BOOK, PAGE 9.

REPRESENTATION

SQUARE TOWERS. — Window Study. Form. Proportion. Appearance. Space Relations.

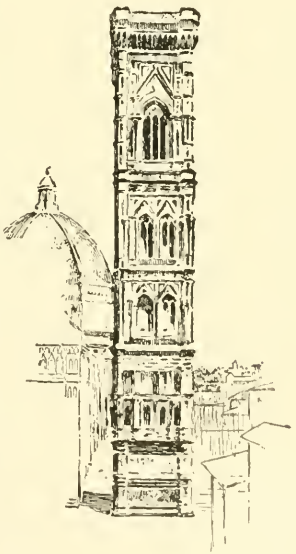
ART. — Selection. Choice of Aspect. Rendering.

[The pupil sketches towers seen from the window, chooses the most beautiful aspects, studies thoughtfully, considering appearance, form, proportion, surroundings, and the space relations shown, and draws the tower or towers, or composition with towers, in the book, seeking for beauty of effect.]

Architectural Construction. — In some parts of Italy during the Gothic period detached buildings were erected for the purpose of containing bells. The illustration shows one of the most famous, the Campanile of Giotto in Florence, which Charles Eliot Norton calls "the most exquisite building of modern times," and Longfellow characterizes as

> "The lily of Florence blossoming in stone,
> A vision, a delight, and a desire."

The illustration of the tower is drawn with the level of the eye about at the first marked division of spaces below the upper windows. This shows that the "point of view" was taken opposite that part of the building.



GIOTTO'S TOWER.

Collections. — In leading to an appreciation of towers, pictures or photographs of fine historic towers may be studied, — the towers of Westminster Abbey, of Notre Dame, the Campanile in St. Mark's Square, and others. Papers and magazines abound in illustrations of architectural features, and the *Architectural Record* and the *Architectural Review* give excellent examples for study. The Prang Note-book Illustrations give some fine specimens of architecture with towers. Pupils are fond of collecting pictures showing points of interest, and are much helped by so doing. That is, they are helped if such a collection means something more to them than merely a number of pictures of historic buildings, the collection consisting of a greater or larger amount according to the interest and enterprise of the individual making the collection. As the art and architecture of a country tell the story of its

people, so each picture may tell its own story of history, legend, or verse all interwoven with the art of the time.

Perhaps it may be desirable to have a school collection, which may be kept in a portfolio or several manila paper scrap-books, and occasionally passed about the room for comment and study. Pupils will be interested to contribute to such a collection by adding pictures or new thought or light upon what they have. Sheets of paper could be attached to single pictures (if they are kept in a portfolio) or inserted in the scrap-books, upon which to write additional information. It will be necessary however, to guard against a mere collection of facts, such as dates, names, and styles, which are unimportant compared with the art feeling shown in the architecture, and its broad meaning as an expression of the life and art of a people, by whom and for whom such masterpieces were built. Art teaching should be broad enough to cover all its various phases.

"Surely impressions only of things are not sufficient for all of us. Cultivation must increase the subtlety of our emotions. Our interest grows and our delight in the pictorial representations of a wider range of subject, embracing history, architecture, legend. details of things beautiful in themselves. not only from their craftmanship, but the disposition on them of materials, precious from their receptivity of color harmonies, and from many other combinations, showing them as priceless expressions of greater minds.— S. R. SPENCE.

Associations. — History and literature are full of beautiful associations and legends regarding towers. The Tower of London, what tales it could tell could it speak ! The origin of towers, the watch-towers of a city when it was necessary always to be ready for an enemy ! The tower as the home of the bells ; the ringing of the bells on many joyful occasions ; the legend that the angels ring the bells on Christmas Eve ! All these things can be brought to the thought of the pupils and give food for the imagination and for creative power. The young mind needs quickening and awakening to the beauty and meaning of the past as well as its immediate surroundings.

"So shall the drudge in dusty frock
Spy behind the city clock
Retinues of airy Kings,
Skirts of angels, starry wings,
His fathers shining in bright fables,
His children fed at heavenly tables."

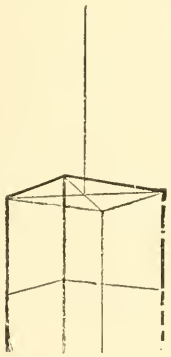
— RALPH WALDO EMERSON.

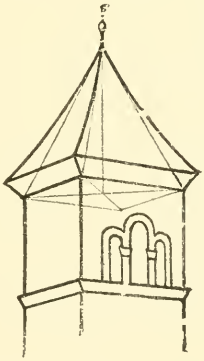
General Method. — As most school buildings are built in an open space, there are often one or more towers to be seen from the windows. Cathedrals and churches generally have bell-towers which, when based upon the form of the

square prism, will show the same constructional lines. Sometimes one is sufficiently near to be seen from the schoolroom seats. When this is not the case, let the pupils make quick sketches upon practice paper at the windows for the leading lines, noting carefully the kinds of windows, if any, in the tower and their position in relation to other parts; then the sketch may be reproduced in the book, adding details from memory, occasionally verifying the drawing by going to the window.

It may be best for the pupils to go out and study towers, fix the lines in their minds and draw later from memory. Attractive sketches may often be made of all the various towers in the town, or school district, studying the excellences and defects. If practicable, the entire class might go out-doors sketching.

Horizon in Relation to the Eye. — If the school building is upon a hill overlooking some houses, then the horizon will be high and the upper lines of the tower may be nearly on a level with the eye, while some of the surrounding roofs





will be below the eye. The horizon will also appear higher from an upper window than from the ground floor. If the tower of the church or building is the only part entirely drawn, it would be well to signify by suggestive lines some of the surroundings. If a few are given, they will show that the tower has a solid connection with the building and is not floating in space.

Position of Apex, Windows, and Some Features of Construction. — As it is a common fault for the apex of a tower to be drawn out of its proper position it will be well to call attention to the fact that it should be drawn directly over the centre of the tower. This centre can be easily obtained by drawing

light lines for a horizontal section of the tower, and diagonals drawn across this perspective square will give the position of the apex. The sketches above will make the method clear. The perspective centre of a window on the side of a tower can be obtained by the same method, by sketching the diagonals of a section of the side. Spaces appear to decrease the farther they are from the eye, thus the distance from the vertical edge of a window to the nearer edge of the tower will be greater than the distance from the farther edge of the window to the farther edge of the tower, although the spaces are actually the same. This is on the same principle that makes a series of telegraph poles or railroad ties appear nearer together the farther they are from the eye, while nearly the same distance apart.

Lead the pupils to observe carefully the importance of the strong upright lines of a tower which give strength and character. When these are crossed by horizontals, effective spaces are produced which in turn are cut by the window spaces. The force and beauty of upright construction lines may be seen in many things, the tall pine upon the hilltop, the grim sentinel and landmark for many a mile, — the masts of ships, flagstaffs, monuments, — such as Bunker Hill and Washington Monuments.

Foreshortening. — If round towers are visible (as the slight suggestion of the dome in drawing-book, page 9), recall the appearance of the base of the cone above and below the eye. An occasional quick review of the appearance of the different solids in different positions may be made interesting and profitable.

Suggestions for the Teacher. — In this work the class will need to work in detachments. Pupils who cannot be at the window might be making a composition from the drawing on the drawing-book page or from some one of the pictures of towers collected by the class. A teacher of architecture in one of the leading colleges found this translation of photographs into line drawings an effective means of study.

Suggestions for the Pupils. — Study the view from each schoolroom window. How many towers can you find? Which seems most beautiful to you? Compare this tower with the picture on the drawing-book page. What resemblances? Look at the drawing of Giotto's tower and see the parts of other buildings sketched around it. Cut an opening one inch by two inches, or smaller, in a piece of paper. Hold the paper so the opening is vertical, and look at the tower you like through it. Try with the opening horizontal. Study the tower and its surroundings. Sketch either a vertical or horizontal oblong on your paper and within it the tower and its surroundings. Study the example in the book for ideas of finishing your drawing. Make one or more of these sketches in your book, arranging them with care.

THE SUBJECT OF DECORATION.

In the earlier books of this series children have been lead, through both observation and original experiment, to feel the main essentials of beauty in ornament. From the present point onward, the effort is not only to deepen and strengthen their sense of beauty and their creative imagination, but also to lead them to use in their decorative design all the knowledge and skill acquired through other lines of art instruction, and to apply them to definite ends or purposes. Studies of landscape, animals and human figures, as well as studies of plant growth, geometric form and simple space divisions, are to be used as material and as means in creative compositions.

Henceforth the underlying ideas of principality, opposition and balance are to be more definitely studied; symmetry, proportion, rhythm, contrast, breadth, stability and repose are to be sought for in original work. Examples of the best mural decoration of living masters are to be studied as the course advances, for their inspiration and suggestiveness along these lines. It is in Decoration of the highest type that man's art creation culminates, completing and crowning the best industrial art with the noblest phase of fine art. It is this phase of art study which gives the greatest opportunity for the development of the highest creative powers of the pupils.

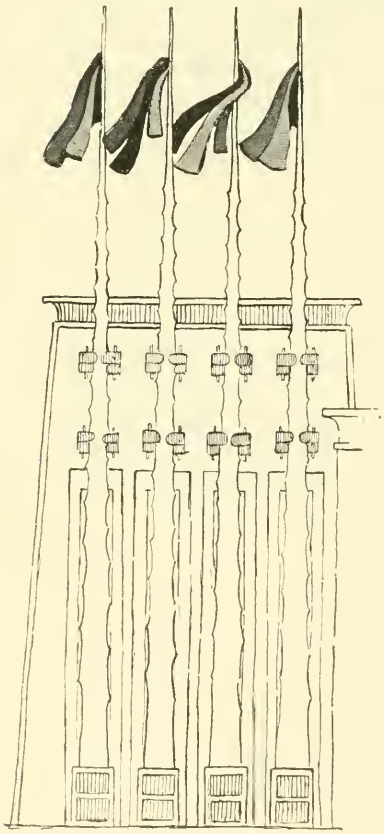
BOOK 7, PAGE 11. SIXTH YEAR BOOK, PAGE 11

DECORATION.

EXAMPLES. — Historic Ornament. Egyptian. Space Relations.

ART. — Selection. Rendering. Expression of Color.

[The pupil studies the examples in the drawing-book, observing beauty of form and curvature, and of space relations; sketches several, chooses two or more, and reproduces them in the drawing-book, planning carefully for the space relations produced, showing color by pencil-painting, or the brush, if desired, and seeking for beauty in relationship and in color expression.]



Historic Ornament. — The needs of many people are primarily food, clothing, and shelter; then follows that higher spiritual want, the desire for beauty. It is of great interest to see how the various people of the world have striven to meet that desire. It manifests itself in fine, pottery forms, in graceful line and harmonious color in clothing, and in imposing architecture — all enriched with fine ornament.

It is of even greater interest to see that while these various peoples meet their various conditions and therefore produce divers results, they all exemplify in their finest results certain principles of beauty. See pages 29–31. To show the development of beauty in ornament by the various nations there have arisen collections of the ornament of the various leading people called Historic Ornament. See page 28 for a statement of the leading styles.

Through fine examples of historic ornament, the principles that govern the production of the beautiful are presented concretely, and the pupils while studying and drawing them continually feel their influence, thus gaining not only in knowledge, but also in culture. For the constant association with fine forms fills the mind with beauty and, with the right

stimulus, makes the creation of beauty possible. And still further, as Plato says, —

"The beauties of earth are steps by which man mounts heavenward, from one fair form to two fair forms, from fair forms to fair actions, from fair actions to fair notions."

The ornament of any country or people reflects in itself the characteristics of the people and of the land which they inhabited.

"Thus in any museum we can see certain great differences in things; which are so evident, so much on the surface, as almost to be our first impressions. They are the marks of the places where the works of art were born. Climate; intensity of heat and light; the nature of the earth; whether there was much or little water in proportion to land; plants, animals, surrounding beings, have helped to make these differences; as well as manners, laws, religious and national ideas." — JOHN LA FARGE.

But it is necessary to know something of these conditions in order to comprehend the ornament. So a knowledge of the general conditions of ancient Egypt will add greatly to the interest in Egyptian ornament.

General History. — Mariette Bey says, "It was Egypt who, in the very earliest times, appeared under the Pharaohs, as the ancestor of all nations."[1] The beginning of history in Egypt dates, according to the best records, five thousand years before Christ. When Solon, a wise man of Greece, visited Egypt, the Egyptian priests said, "O Solon, Solon! you Greeks, you are nothing but children!"

Mariette divides the general history of Egypt roughly into three periods: —

1. The Heathen period, from about 5000 B.C. to 381 A.D.
2. The Christian period, from 381 A.D. to 676 A.D.
3. The Mussulman period, beginning 676 A.D. and now continuing.

To the Heathen period belong the great works of Egyptian art, — the pyramids, the tombs, the temples.

The Country. — Look at the map of Africa. Away over at the extreme east lies Egypt. The extent of this country is not distinctly marked as it passes out into the Libyan Desert on the one hand and the Nubian Desert on the other; but the country of Egypt is practically limited to the immediate vicinity of the Nile, expanding at the Delta so that in shape it is really like the lotus flower, with a long bending stem. Its area is 12,500 square miles, but very little greater than that of the state of Maryland.

[1] For the general history of Egypt, there is nothing better than *Outlines of Ancient Egyptian History*, by Auguste Mariette. It was written for the use of the schools in Cairo. A translation has been published by Charles Scribner's Sons.

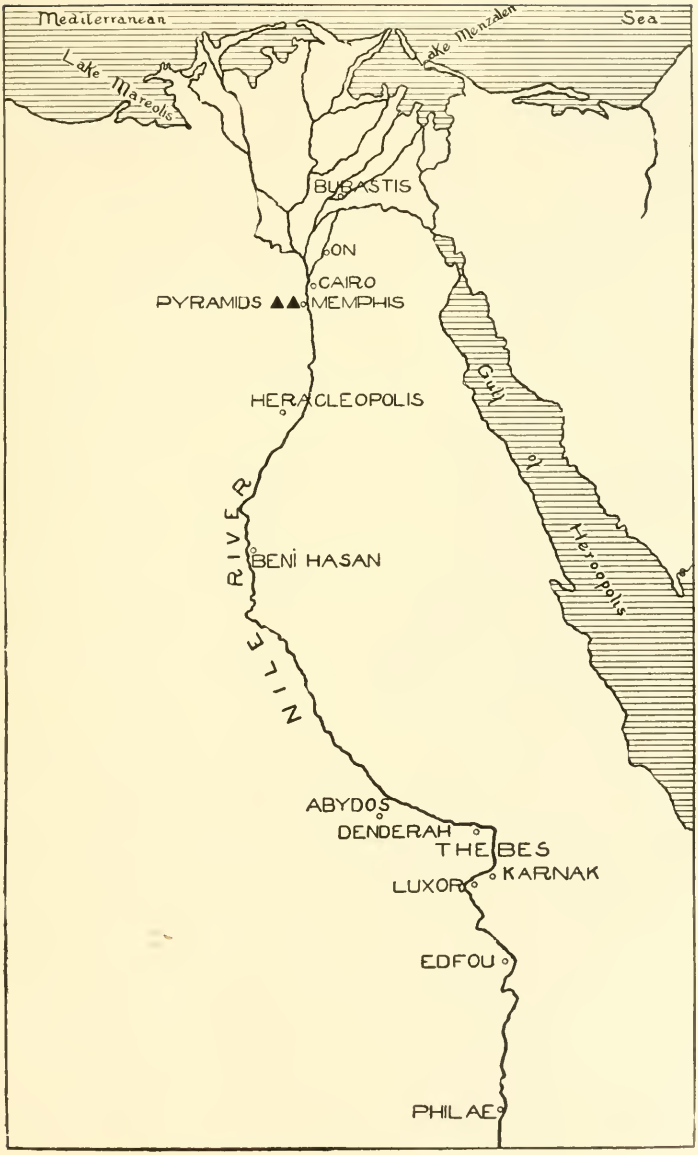
Egypt was divided into two parts, Upper and Lower Egypt. These were so named, not from the points of compass, but from the direction in which the river runs — Lower Egypt embracing the region of the Delta as far up the river as the Pyramids, and Upper Egypt embracing the part farther up the river, that is, farther south.

"Past emerald plains and furrowed mountains old,
Whose violet gorges snare the wandering eye,
The pillared palms day's dying embers hold,
Like shafts of bronze against the crimson sky,
And every cloud mirrors its rosy fold
In tremulous waves which blush and wander by —
We float, and feel the magic penetrate,
Till all our soul is colored by the hues,
Making a heaven of earth, and, satiate
With splendor, we forego the use
Of speech, and reverently wait
While fades the glory with the falling dews,
And darkness seals for memory each gleam,
Happy to know it was not all a dream." — THOMAS GOLD APPLETON.

It seldom or never rains in Egypt except in the Delta. But the Nile by its inundation, fertilizes the country on either side. The Nile begins to rise about the middle of June, it continues to rise for about three months, and overflows its banks, carrying to the fields the rich mud which it has brought from the mountains. By means of canals, the water is carried farther back into the country. After the overflow the river gradually subsides and flows peacefully between green fields of cotton and grasses. The people seeing how year after year it fertilized the land, considered it as almost a god. An Egyptian hymn is given here in part. The yearly inundation of the Nile, majestic and beneficent, is the wealth of Egypt.

"Hail to thee, O Nile!
Coming in peace, giving life to Khemi,
Watering the land unceasingly,
He maketh the fields ready for the plough;
Every creature receiveth food.
* * * * * *
Shine forth, shine forth, O Nile!
Giving life to man by his oxen,
Life to his oxen by his meadow land —
Shine forth, shine forth, O Nile!"

Its People. — The people of Egypt were particularly proud of the color of their skin; they believed that it rendered them superior to foreigners. The men



Map of Egypt. From Mariette Bey.

STATE NORMAL SCHOOL,

PHARAOH.

were brown, the women a light yellow. There were two different types varying in form and feature. The face of the one was refined, of the other rather coarse and heavy. The first had a moderately high forehead, aquiline nose, rather full lips and a pleasantly rounded chin; the second had very thick lips and heavy jaws, a short nose and a low forehead. These people differed in their nature as they did in their personal appearance, the first being serious and dignified, the second gay and pleasure-loving.

As a people they cared very much for feasts and processions and for the exhilaration of bright color. Their love for ornament was shown in their dress as well as in the decoration of their temples and tombs. The illustrations show richly decorated dresses, the ornament being remarkable for its very simple elements.

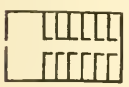
They worshipped many gods, sometimes taking them in threes as Osiris, Isis and Horus or Amen, Mut and Chonsu. There were the sun god Ra and the god of truth Ptah, Sechmet the lion-headed goddess of war and Pasht, a lioness-headed goddess and many others. Animals were sacred in Egypt, the gods being supposed to manifest themselves in the forms of animals, as cows, cats, dogs, ibises, hawks, vultures and even apes. These constantly appear in their hieroglyphs, in their amulets and their sculpture.

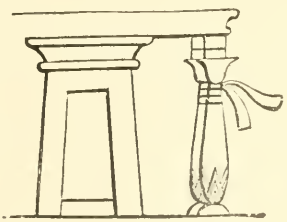
How they Lived. — No phrase occurs more often in Egyptian inscriptions than this: *to live a happy day.* Their country was bright and sunny, their great river was beneficent and from its waters came the lotus, the beautiful flower, a symbol of life, immortality and the resurrection. They were a devout people and gave time to religious rites and ceremonies, but at the same time sought for enjoyment in other ways.

> "Here were majestic temples reared of yore,
> Vast marble halls and columned porticos;
> Here maidens garlanded the sacred rose,
> And throngs passed singing by the river shore,
> Hither long barques pipe-playing pilgrims bore."
>
> — CLINTON SCOLLARD.

They wore much rich ornament. Women of rank wore a skirt of rich stuff fastened at the waist, and over their shoulders a loose robe tied at the waist. Their head-dresses, necklets, bracelets and anklets were most elaborate. The Egyptian gentleman wore a garment with sleeves and a kind of apron fastened with a girdle or sash. Royal apparel was most gorgeous, made of the most beautiful stuffs and the richest ornament. All these things are learned from the inscriptions and scenes engraved on the walls of their tombs and temples. Their trades and occupations, their sports and their ceremonies are all depicted there. An interior of a tomb is shown on page 16 of the drawing-book, which will give some idea of the way in which the walls were covered. These picture-stories are not only wonderful in their delineation but are also effective in arrangement.

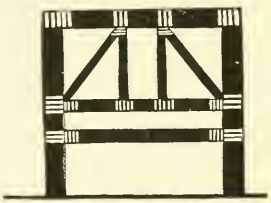
Their houses follow the lines of the country in which the vertical of the palm trees and the horizontal of the deserts prevail. They were quite simple in construction, rarely more than two stories high, and always seem to include courtyards and open spaces within the walls. This gave opportunity for gardens, lakes and trees. A plan of a simple Egyptian house and a side elevation of a more pretentious house are given here. Some houses consisted of a court and two or three store-rooms below with a large chamber above. Their door and window openings were small — they were closed by strips of matting or by hanging rugs — sometimes having wooden divisions at the lower part making a kind of grating. The roof was flat, frequently it rested on pillars leaving an

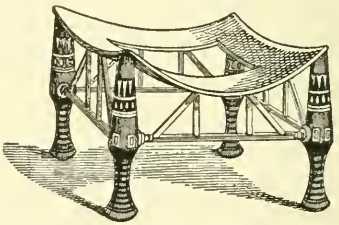




open but sheltered place where the inhabitants could breathe the refreshing north wind and enjoy the beauties of the garden; rugs could be dropped from any side. The house itself was probably gayly painted.

Their delight in beauty influenced their dress, their furniture and their table. The great dining hall was the principal room in the house. On the large table were placed fruit and bread, on smaller tables roast meat and other articles of food. In the homes of the wealthy beautiful rugs were spread upon the floor. Table decoration was especially studied and wreaths of flowers were as necessary as food. The guests were decorated with flowers; they wore lotus buds in their hair and held them out to each other to smell as a fine courtesy. Flowers and gay necklets were the accompaniment of all ceremonious dining. The Egyptians loved flowers and trees. The books on ancient Egypt are full of illustrations of their manners and customs. Their seats are illustrated below.



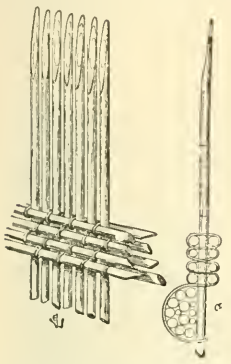


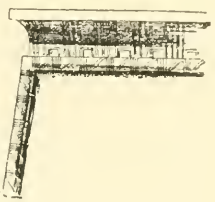
Type of the Hut. — The first Egyptian habitations, the first temples and tombs were cut in the rock, in the form of grottos. But when the people spread over the plains and on the fruitful banks of the Nile, they built huts in clay consolidated by the aid of reeds.

Raised on terraces out of the way of inundations, these huts on a rectangular plan offered a kind of skeleton composed of uprights and cross pieces made of bundles of reeds; the sketches give an idea of the manner of making the construction and putting the assemblage together. Taken together they constitute a framework determining the plans of the exterior and interior walls of thick clay; these were built on the inside of the skeleton, the members of which were thus buried in the clay.

Bundles of reeds, projecting at the angles, were like mouldings to protect the angles or edges; others ran to the upper edge and served as a base for a kind of

palisade of reeds, planted in the horizontal mouldings; against this flexible palisade they beat the clay to the upper extremity. The reeds curved under the thrust of the clay in a way to make the widened form, so characteristic, of a *gorge*, crowning the edifice on the exterior and sheltering the exterior walls of the hut from rain. A terraced flat roof of clay, supported by joined stringers, protected the interior. The small door was also surmounted by the gorge. The same quadrangular form with walls sloping for the sake of stability and with the same gorge and the flat roof prevails in all Egyptian temples, as in the illustration of the temple of Edfou on page 138. The ornamental finish at the top and at the angles of temples shown above imitates the binding together of reeds which protected the clay hut.





All styles begin by being suited to the climate and to the materials obtainable by the people who create it. And later they maintain their traditional forms.

Monuments. — One great characteristic of the work of this wonderful people is its colossal size. Their belief in immortality led them to attempt to create for eternity. The conception and the execution were stupendous. Going up the Nile river, the first great monuments are the sphinx and the pyramids. The three great pyramids were built by three great kings. Their simple ground plan was a square — equal in strength and stability and expressing absolute mastery.

The sides of the three great pyramids of Gizeh — Cheops, Chephren, and Mycerinus — face the four cardinal points of the compass. Cheops measures, approximately, seven hundred and fifty feet on each of the four sides. It is four hundred and fifty feet in height and covers an area of nearly thirteen acres. Its estimated weight is about seven million tons. Let one consider any ground-area of thirteen acres of land with which he is familiar, and in imagination pile upon it, in pyramidal order, blocks of stone with an average thickness of three feet, until the apex shall reach a point four hundred and fifty feet from the foundation, and he will then have gained some idea of the colossal dimensions of this silent witness of more than five thousand years of human life and activity.

The first requirement for the active construction of these pyramids appears to have been the leveling of the rock surface. This was probably followed by the excavation of the subterranean chambers and the erection of a small truncated pyramid in the centre of the rock. If the life of the king were prolonged through

the first stages of construction, he added new outside layers of stone to the surface in the form of great steps, following the outline of the first structure. The summit was crowned with a pyramidal stone and the step-like spaces on the surface were filled so as to form a solid mass with four sloping sides. From Cairo a well-constructed road shaded by fine lebbek-trees leads to these pyramids.

Road to the Pyramids.

The Sphinx has a human head with the body of a lion, suggestive of strength and intelligence. It has looked out over the sands of Egypt, inscrutable for sixty centuries. See the illustrations on page 137 and on page 16 of the drawing-book.

"Couchant upon the illimitable sand,
Like some huge Lybian lion, human-faced,
The solemn march of centuries thou hast traced
With brooding eyes that seem to understand
The secrets of the ages — whose the hand
That rolls the stars along the ethereal waste,
And for what purpose suffering man is placed
Upon this orb, to be or blessed or banned." — Clinton Scollard.

"Come what come may, or sun or storm, the river's calm or the desert's bleakness
And still I couch in the shifting sands and watch the years alone.
Holding within my giant grasp the strength of art and the sculptor's weakness,
The man who died — the thought that lived in everlasting stone."

— ERNEST MCGAFFEY.

The Egyptians also erected obelisks of great height, each made of one stone, hewn from their wonderful rocks. One of these great obelisks, was brought from Egypt and erected in Central Park, New York, where it now stands. Another stands on the Thames embankment in London.

"Three thousand years it stood
Upon the sweet, broad Nile.
And watched the gliding flood,
The blue skies smile.

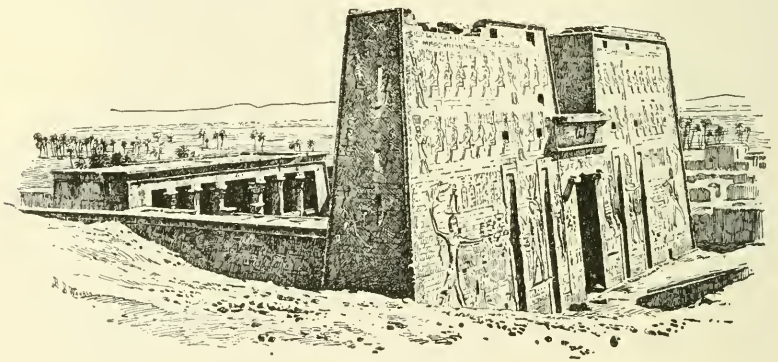
"And many a century more.
Where it of old would stand,
It lay half-covered o'er
By the hot sand.

"Now with signs graven deep,
In this our Northern Isle,
Where the skies often weep
And seldom smile.

"Once more again it rears
Its dim, discrownèd head.
Though all those countless years
Its life is dead."

— LEWIS MORRIS.

Temples. — The temples of the Egyptians were also remarkable. Of immense size, they stand to-day as marvels of power and skill. The illustration below shows the temple of Edfou, chosen because it is one of the best preserved, although not one of the oldest or largest, of Egyptian temples. It is surrounded by the *débris* of ancient cities,— in fact it was almost completely covered with the accumulations of many centuries until 1860, when it was thoroughly excavated. It is in an almost perfect state of preservation, although two thousand years have passed since it was reconstructed. In all probability its foundation dates back to a very early period. Its walls are covered with most interesting inscriptions, from which we learn that restorations were commenced two hundred and thirty-five years before Christ, and finished one hundred years later.



TEMPLE OF EDFOU.

The temple is dedicated to the god Horus, — "Horus who spreads his wings; the great god; the lord of heaven, who, clad in bright plumage, comes forth out of the sun-mountain." When the temple was consecrated, an image of the god was carried in solemn procession; and extended accounts are given of the elaborate festivals that were held in honor of the god at the completion of the temple. According to the inscriptions, Horus is astonished at the magnificence of the buildings, and joyfully expresses himself in words of praise.

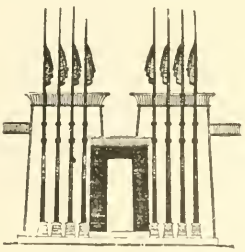
As one approaches Edfou the pylon looms up above the great mound of earth at its base. This pylon, or watch-tower, is two hundred and fifty feet wide and one hundred and fifteen feet high. The top may be reached by a staircase of two hundred and forty steps. From this point is gained a very good idea of the surrounding country, of the Nile and of the villages, as well as of the ground plan of

the building, which, including the pylon gateway with interior court, is four hundred and fifty feet long and two hundred and fifty feet wide.

Originally the Egyptian temple probably consisted of the sanctuary only, a building of four walls; and in the construction of any Egyptian temple the sanctuary was the nucleus or part first built. In the desire to produce a temple of more impressive appearance, and to provide chambers necessary for the preservation of relics used in religious ceremonies, the building was gradually extended outward, the successive erections increasing in width and height toward the great entrance or pylon at the front, until many pylons and walls divided the interior courts or halls from one another. Thus in the temple of Edfou we find a huge pylon or watch-tower, then a large forecourt surrounded by a high wall and colonnade. Back of this court is a hypostyle or pillared hall, the roof being supported by eighteen columns. Successive doorways give admission to smaller and darker halls, leading to the sanctuary in which was placed the image of the god. The plan is given in Book 8, page 9; Sixth Year Book, page 25, showing the arrangements of the various halls.

The various chambers of the temple are dimly lighted by slight openings in the roof, and even to-day there lingers an atmosphere of mystery and awe. One steps reluctantly into this pagan temple, as if trespassing upon forbidden ground. Nevertheless, one is not content till he has penetrated into its sanctuary, within which is to be seen a beautiful shrine of granite, such as is not often found in Egyptian temples. Owing to the destruction of part of the roof, this otherwise perfectly dark chamber and its inscriptions may be easily studied.

Upon the walls of the temple are inscriptions, drawings, figures of gods and kings; and when all these decorations were brilliant in color and the temple was perfect in its construction, the sight must have indeed stirred the soul of the worshipper. From the masts placed in front of the pylons floated pennants, and gorgeous processions moved slowly and impressively toward the great temple on festive days, bearing standards of color, symbols, and images of the gods.



All, however, were not admitted to the sacred temple. Some were permitted to step within the first court; a more privileged few might pass within the second hall; only the elect entered the third court; and to the "holy of holies" only the high priest and the king, who represented the god on earth, were admitted.

The greatest Egyptian temples are at Thebes. This city lies north of Edfou, on both sides of the Nile, in the broadest section of its valley, and was formerly the capital of Southern or Upper Egypt. Its most flourishing period was from about

1500 to 1000 B.C. It was called by Homer the "Hekatompylos," or "hundred pyloned" city, in allusion to the pylons of the numerous temples.

"Royal Thebes,
Egyptian treasure-house of countless wealth,
Who boasts her hundred gates, through each of which,
With horse and car, two hundred warriors march."

Two of its most important quarters were Karnak and Luxor, both lying on the same side of the river, as will be seen by the map on page 131.

The temples of Karnak and Luxor were the most magnificent of the Egyptian temples. The temple of Karnak ranks among the largest structures of the world. It was 1200 feet long by about 260 feet wide; but it must be remembered that those are the dimensions of the enclosed space; there were no buildings on a considerable part of this area.

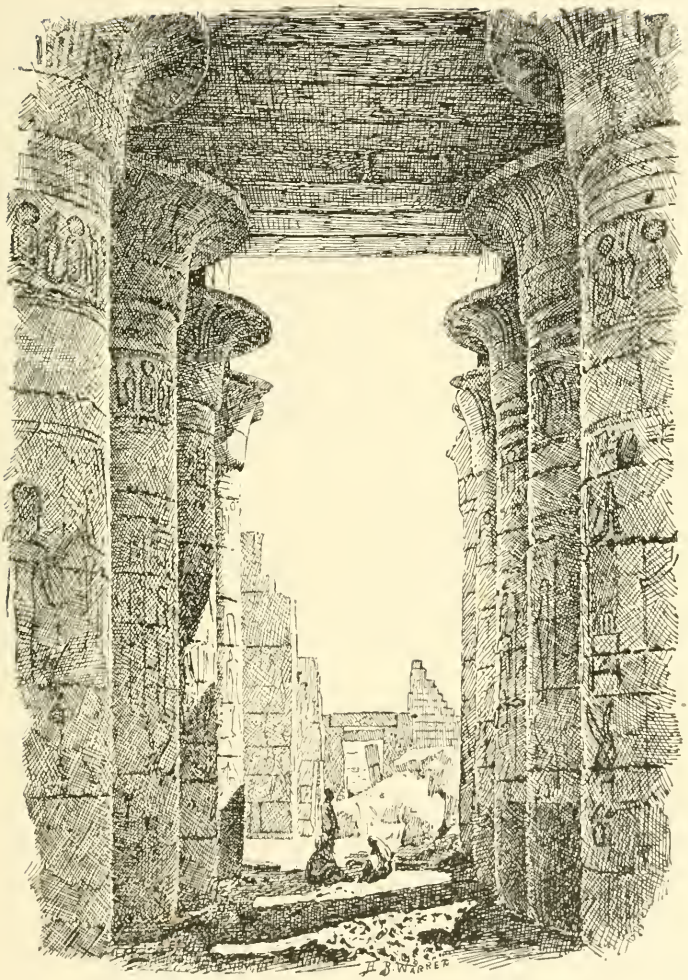
The propylon that stood before the entrance to one of the temples is illustrated on page 16 of the drawing-book.

"Its flag masts shine to the sky adorned with electron."

The grand hypostyle hall, some columns of which are seen in the illustration on the opposite page, was 340 feet long by 170 feet wide, and with its walls and pylons covered an area of 88,000 square feet, a larger space than is covered by any of the great Gothic cathedrals, except those of Milan and Seville. If this area is compared with that of some great building which is familiar to the pupils, some conception of the magnitude of this wonderful structure will be gained.

"No language can convey an idea of its beauty, and no artist has yet been able to reproduce its form so as to convey to those who have not seen it an idea of its grandeur. The mass of its central piers, illumined by a flood of light from the clerestory, and the smaller piers of the wings gradually fading into obscurity, are so arranged and lighted as to convey an idea of infinite space; at the same time the beauty and massiveness of the forms, and the brilliancy of their colored decorations, all combine to stamp this as the greatest of man's architectural works, but such a one as it would be impossible to reproduce, except in such a climate, and in that individual style in which and for which it was created." — *Fergusson.*

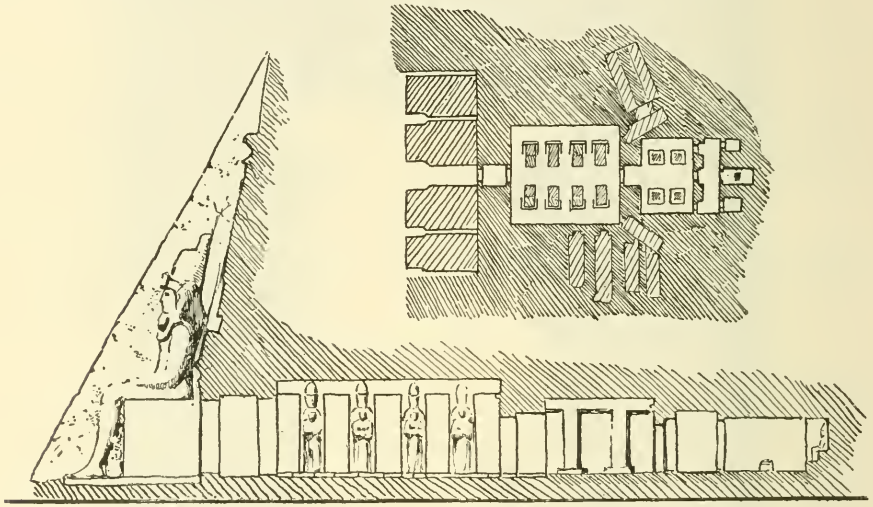
This pillared hall is the most magnificent single chamber ever built. It has 164 great stone columns, divided into three groups; twelve central ones, such as are shown in the illustration, each 66 feet high and 33 feet in circumference. These formed the main avenue. At either side of the main part of the hall was an immense wing. In each of these wings were 61 columns, each 42 feet high and 27 feet in circumference, arranged in two rows of six, and seven rows of seven each. The



Columns at Karnak.

whole was roofed with huge blocks of stone, the light coming from the upper part. The walls and ceiling and pillars were covered with colored decoration, making a most magnificent whole.

There were other temples all about Karnak, connected by long avenues of sphinxes, making the grandest assemblage ever produced. Seti I. and his son, Rameses II., two of the greatest kings Egypt ever knew, built these magnificent temples. Under these kings Egyptian architecture culminated; the temples of Thebes and of Abydos stand unsurpassed for variety, beauty, and magnificence.



Vertical and Horizontal Section of Rock-cut Temple at Ipsamboul. Scale for vertical section, 50 ft. to 1 in.; for horizontal section, 100 ft. to 1 in.

The great conceptions of the Egyptians are also manifest in their rock-cut tombs and temples. The illustration, Plate X. shows part of the façade of the great rock-cut temple at Ipsamboul in Nubia. This temple extended one hundred and fifty feet into the rock. The vertical section and plan given above show its structure. Its façade was adorned by hieroglyphs, by small statues, and by four colossal statues, each seventy feet high, of the king, Rameses II., who caused the temple to be made. The tremendous size of these figures can be somewhat realized by comparing the Arab with the statues. The calmness, dignity, and majesty of their attitude and expression, "moulded in colossal calm," seem to speak of eternal power and wisdom.

The ruins of temples on the island of Philæ, in the southernmost part of Egypt proper, are very beautiful. A row of columns from Philæ showing a great variety of fine capitals is given in Book 7, page 16. On this island there is a small temple, known as Pharaoh's bed.

Rock-cut Temple of Ipsamboul.

The colossi of Memnon, two seated figures more than sixty feet high, each cut from a single block of sandstone, are among the most imposing of the great works of Thebes. "There they sit together, yet apart, in the midst of the plain, serene and vigilant, still keeping their untired watch over the lapse of ages."

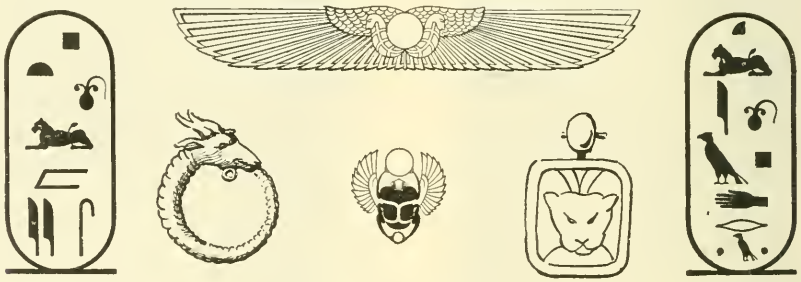
Picture Writing. — The historic records of Egypt were kept by means of hieroglyphics or picture-writing. Illustrations of these are given below.

The first illustration is from the temple at Abydos, and represents the great Egyptian king, Seti I., in royal array, holding an image emblematic of truth, having on its head the ostrich feather, emblem of justice from its perfect symmetry, and in its hand the looped cross, the symbol of divine life. Below is a very beautiful lotus decoration, and above his head are royal cartouches, containing two of his names and other hieroglyphics. The sculpture of this portrait bas-relief is remarkable for its extreme delicacy. It is considered one of the masterpieces of Egyptian art The figure is in very low relief, and casts only a very slight shadow. The face has a refinement and purity that point to the ideal, and recall the belief of the Egyptians that portraiture had a magic influence on the destiny of the soul.

The next illustration shows a relief and inscription from the great temple at Karnak, and prisoners from Palestine awaiting punishment. The hieroglyphic inscription, carefully arranged with regard to decorative effect, is explanatory of the scene.

Royal Cartouches. — The royal cartouches of Ptolemy and Cleopatra are given on page 10 of the drawing-book. The same cartouches appear at the left and right of the illustration below.

Through the discovery of the Rosetta stone in 1799 the signification of hieroglyphics became known to the world. This famous stone was turned up at Rosetta, in Egypt, by some French soldiers while digging an intrenchment. There were three inscriptions engraved upon the stone ; one in the Egyptian hieroglyphics used by the priests, one in the characters used by the common people, and one a Greek translation of the other inscriptions. Even with the aid of the Greek translation, it was a long time before the Egyptian characters could be understood, but Champollion succeeded in deciphering the inscriptions in 1822. He first noticed that



PTOLEMY. USE OF ANIMAL FORMS. CLEOPATRA.

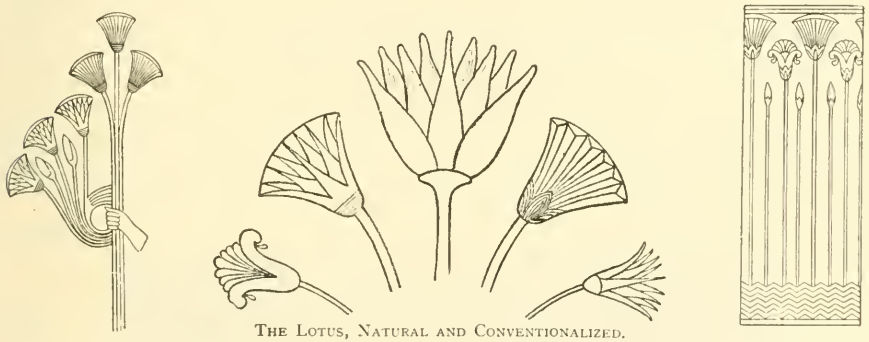
wherever the name of Ptolemy occurred in the Greek inscription, there was in the hieroglyphics an oblong figure with rounded ends containing five signs. He called this oblong figure a cartouche, and concluded that it stood for the name of a king. He surmised that the five characters stood for P. T. L. M. S., in the name Ptolemaios. Champollion knew of an inscription containing a cartouche that should be Cleopatra. In Ptolemaios he had three letters needed in Cleopatra, viz., P. T. L. Compare the two cartouches above and discover the letters represented by the same characters in each. These signs were sometimes arranged in a vertical line and sometimes side by side. Here began the understanding of Egyptian hieroglyphics, and after much patient study the historic records on the walls of temples and tombs were read, and the history of Egypt, written in stone, became known.

Egyptian Ornament. — The Egyptians added to their colossal structures a wealth of ornament. All ornament may be considered as either symbolic or æsthetic. The ornament of the Egyptians was symbolic ; and their ornament stood

to them not only as outward emblems of the things represented, but also as emblems of the deeper and hidden meaning of these things.

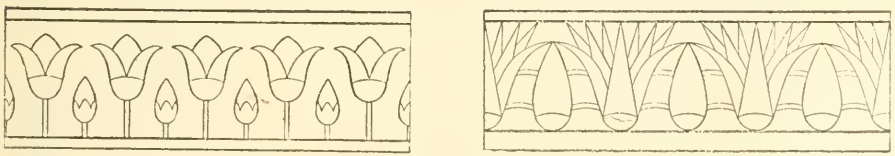
"Art in Egypt was kept rigidly within certain bounds, lest the majesty of the beautiful symbols might be clouded and the memory of the awful mysteries they symbolized become dim in the hearts of man." — WM. MORRIS.

Petrie says that the love of form and of drawing was perhaps a greater force with the Egyptians than with any other people. Their decoration was profuse, it might almost be said to be universal; their surroundings furnished them motives.



THE LOTUS, NATURAL AND CONVENTIONALIZED.

One great decorative motive was the lotus flower which covered the surface of the Nile. This flower, conventionalized in both its front and its top views, is found in almost all Egyptian decoration. It appears several times on page 10 of the drawing-book, and may be seen in the borders below. For further treatment of the lotus, see page 154.



Their great benefactor, the Nile, was another great motive, appearing first in the zigzag, representing the Nile at rest, seen above and on page 151, and later in the scroll, representing the Nile in motion. The scroll appeared not only in borders as seen on pages 153 and 155 of this manual, and on page 10 of the drawing-book, but also in various modifications in surface coverings, as seen on pages 151 and 155.

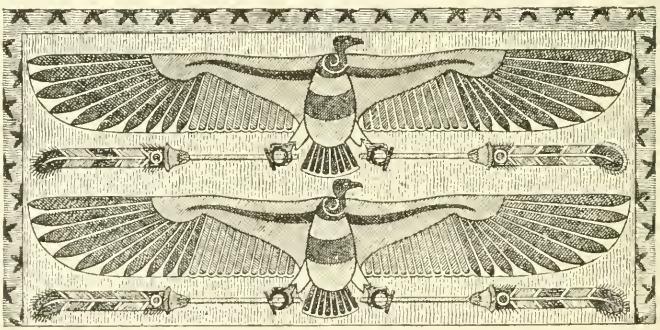
Among other symbolic ornaments may be mentioned the Tau, or Sign of Life, the feather of justice, the fan of royalty, and the mace of power.

The use of animal forms in amulets is illustrated on page 144.

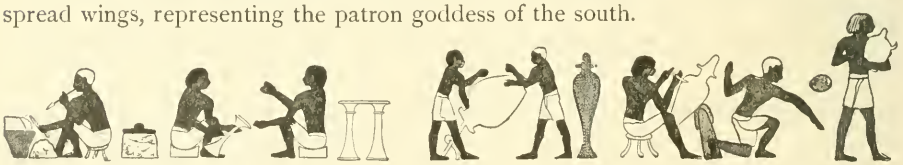
The great divine motive, the winged globe, (page 144) was symbolic of supreme power — the globe as the sun or creation, the asp on either side as spirit, intelligence and dominion, and the wings as protection. An inscription at Edfou says that Thoth ordered that this emblem should be carved over every doorway in Egypt. It does not often occur to the man who sings —

"All my trust on Thee is stayed,
All my help from Thee I bring,
Cover my defenceless head
With the shadow of Thy wing,"

that he is borrowing the figure of his prayer, through the Hebrew, from the Egyptian who forty centuries ago carved over his doorway a pair of outspread wings, the symbols of divine protection.

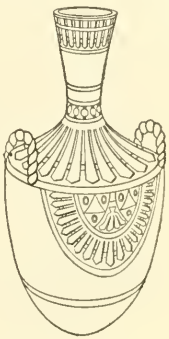


A similar decoration was frequently found on ceilings — the vulture with outspread wings, representing the patron goddess of the south.



The vase illustrated on page 147 is now in the Louvre, and is typical in its form of Egyptian vases, frequently found covered with hieroglyphs and with beautiful

decorations. It is called an *amphora* on account of its two handles, and is also called an *apode* because it has no foot or base. These footless vases or *apodes* were made to hold liquids or grains; they were commonly thrust into the ground for support. Egyptian potters are seen at work in the illustration on page 146, taken from one of the tombs. The whole life of the people, their occupations, their amusements, their manners and customs, their rites and ceremonies are pictured on the walls of the tombs in a most careful and lifelike way.



Illustrations in the Drawing-book. — At the left, below the winged globe on page 10 of the drawing-book, is the scarabæus, or beetle. The scarabæus, or scarab, was identified with the rising sun, and typified creation, resurrection or new birth. One signification is given as evolution. In the tombs and ruins of temples there are found myriads of models of the beetles, that seem to have been worn as amulets.

The river Nile is symbolized by the wave scroll that appears in the three borders. At the right of these borders is what is known as the key of the Nile or the Sign of Life, the looped cross on a decorative background of lotuses; while in the palmette and in the borders the lotus appears again, and the rosettes are from the top view of the lotus.

A great deal of Egyptian ornament was produced by very simple means, by horizontal and vertical lines with varying spaces and colors, as seen on the mummy case. Flower petals were also used, as is seen in the elaborate collars and necklets worn.

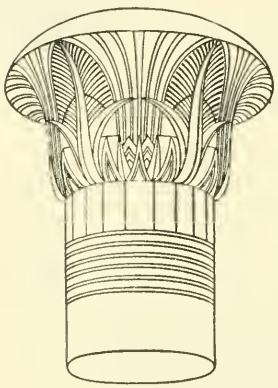
Egyptian lamps were open and filled with oil, in which there floated a wick. The one at the right, on the drawing-book page, shows the application of the rosette in the ornament.

> "Deft was the patient artisan
> Who moulded thee in such a way
> That thou hast long outlasted man,
> Thy brother, built of frailer clay."
>
> — CLINTON SCOLLARD.

The mummy case at the lower part of the drawing-book page speaks of the belief of the Egyptians in the immortality of the soul, and in its return to the body

after death. Because of this belief, they took every means to preserve the body, embalming it with great care. A scarab was fastened upon the breast, and then the body was swathed in numerous bandages bearing inscriptions. The mummy was then complete. The wealthier classes placed the mummy in a wooden case, completely covered on the top and sides with painted ornaments.

Pillars and Capitals. — Egyptian pillars and capitals are most interesting, and of great variety. There seem, however, to be four general types — those which apparently represent a palm-tree, spreading at the top; those which represent stems or reeds bound together, or a lotus bud, called a lotiform capital; those which open like a bell-flower at the top; and those which have the head of a divinity instead of a capital. The so-called palm capital is illustrated on page 10 of the drawing-book, the lotiform capital at the left on page 149, and the bell capital by the capitals from Thebes and the Isle of Philæ on the same page. The strong, stiff stems of the papyrus are supposed by many to be the type of such Egyptian shafts and capitals.[1] The ornamentation is largely that of the lotus.



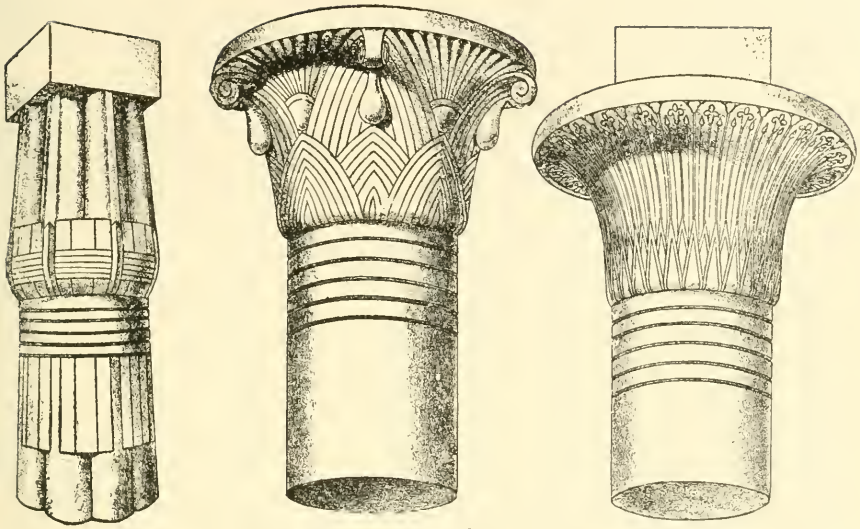
Capital from Philæ.

The column illustrated in the drawing-book is of red granite, and is seventeen feet high. It was taken from a temple in the city of Heracleopolis. It presents a beautiful example of a palm-leaf capital. Upon it are graven the names (in royal cartouches), titles, and attributes of Rameses II., son of Seti I.; and he is represented as making offerings to the god Horus. This column is now in the Museum of Fine Arts, Boston, and its companion is in the British Museum.

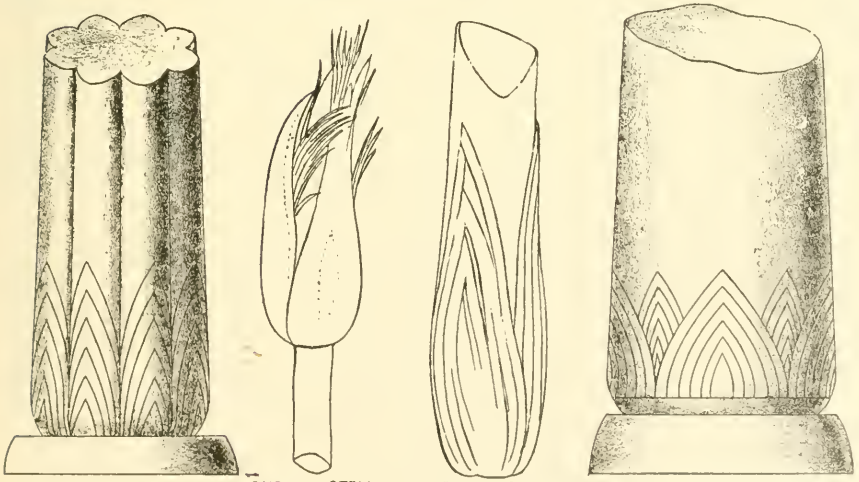
The Exercise. — In order to get the best results from this exercise, something of the Egyptian people, their history, and their colossal work, should be presented. Egyptian characteristics are found in the familiar Bible stories of Moses, of the ten plagues, of Joseph and his coat of many colors. They give some idea of what Joseph's coat of many colors was — perhaps something like a fine Oriental rug. Most wonderfully harmonious color combinations are found in Oriental fabrics.

The river Nile, its inundations, and its lotus flowers, should be brought up. The ornament on page 10 should be studied to see how the beauty in their surround-

[1] Wm. H. Goodyear refers all these flower-like forms to the lotus. See his very interesting and erudite book, *The Grammar of the Lotus*.



TEMPLE NEAR THEBES.



TEMPLE AT LUXOR
1250 B.C

BUD AND STEM OF THE PAPYRUS PLANT

TEMPLE ON THE ISLE OF PHILAE,
106 B.C.

ings of the Egyptian people was reflected in and recalled by the ornament in their dress, in their homes, and in their temples and tombs. Color was used abundantly in brilliant masses, not only in the temples, but also in the tombs and on the mummy cases, which were profusely ornamented.

Other examples of Egyptian ornament, from the walls of tombs and mummy cases, are given on page 151. The borders at the upper left of the page foreshadow the Greek fret just as the lowest left hand border foreshadows the Greek anthemion, the upper border at the right foreshadows the Greek scroll, and the second border at the right the Greek egg-and-dart moulding. It will be noticed straight lines and sharp angles play a large part in Egyptian ornament.

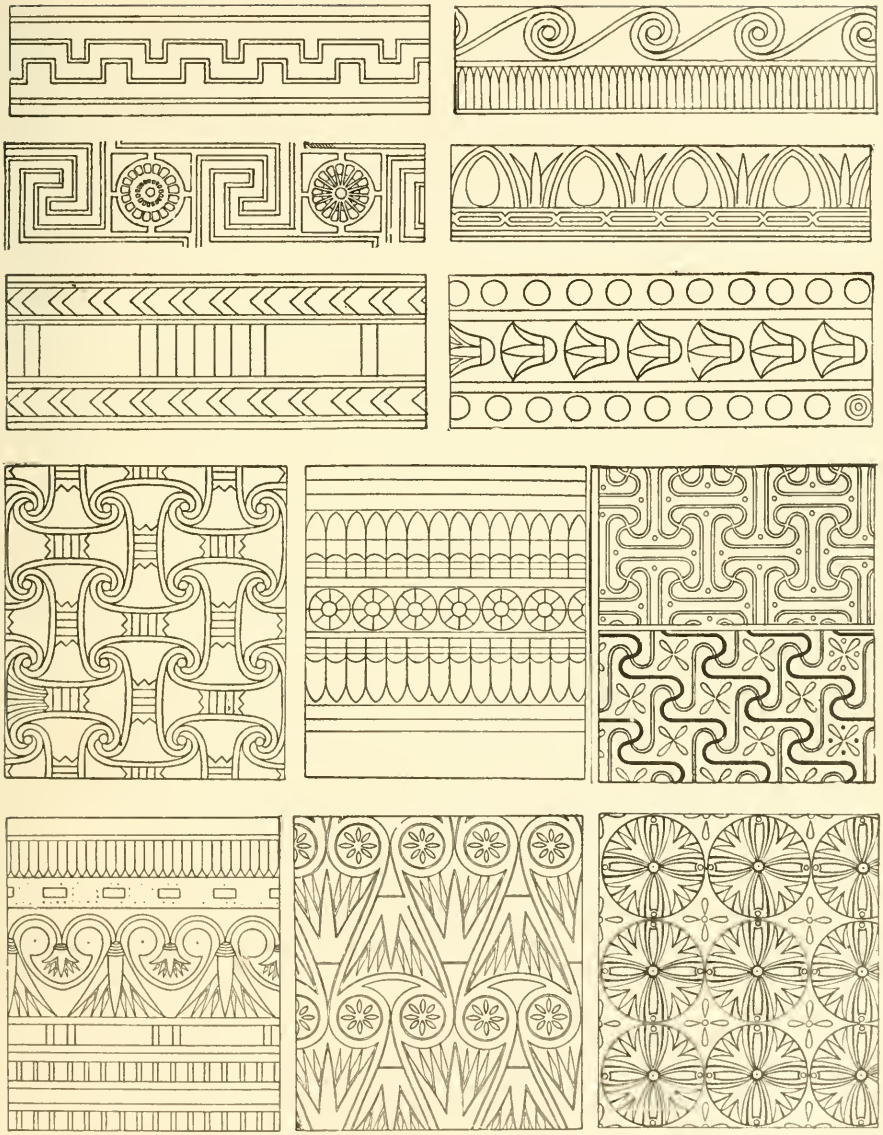
A choice should be given to the pupils as to what example of ornament they will draw. It will be interesting for them to compare the three borders on the drawing-book page, and see how they vary as to the way in which the space is used — the first having simply the scroll and the background varying in color; the second having the background partly filled between the scrolls with the lotus, and the third varying from the others very much as to the general character of the scroll and of the ornament. They are all to be studied especially for their space relations. The Egyptians drew with very great care and precision without being mechanical. It will be very interesting to suggest to the pupils that they take the simple elements of vertical and horizontal lines and work out an original border after the style of the Egyptians.

The examples may be drawn with the pencil or the brush; color may be expressed by pencil painting, by ink, by water-color, or by colored paper.

For work in the study of color and for the use of colored paper for this year, see Study of Color, page 95, and also The Prang Examples of Historic Ornament in color.[1]

As some may wish to work out this exercise in color, an account of the colors used by the Egyptians is given. The palette of the Egyptian artist contained seven depressions in the form of royal cartouches, for seven colors, to be arranged in the following order: white, yellow, green, blue, red, dark brown, black. There were two kinds of yellow, — a bright yellow and the dull yellow of yellow ochre (one authority gives five kinds of yellow); there were three kinds of blue, — an azure blue, a greenish blue, and a dark blue; the reds were made of burnt ochre. Egyptian ornament seems to have inclined more to yellow than to any other color. Green

[1] The Prang "Examples of Historic Ornament." Prepared in color by Mrs. Hannah Johnson Carter. The plates are 6″x 9″. There are now ready Egyptian, Greek, Roman, Byzantine, Romanesque, Saracenic and Gothic plates. Published by the Prang Educational Company.



From Walls of Tombs and Mummy Cases.

A Page of Egyptian Ornament.

was used less than red, yellow, and blue. They had also the grays, except violet gray. Blue blue green, and dark blue blue green seem to be nearer the Egyptian and Oriental blue than does a normal blue. Dark red red orange is a good Oriental red. Colors are much affected by their juxtaposition and no people made more use of this fact, consciously or unconsciously, than the Orientals. In their most brilliant fabrics very little intense color was used.

The scarab as given on page 10 may be effectively carried out in colored paper or in water-color. The wings may be dull green, the circles red orange or a yellow red, and the body, legs, and bands on the wings black. The black can be obtained by mixing red, yellow, and blue with the greater amount of blue. Use the paint quite thick and mix directly on the cakes. Yellow green paper (D) can be used with red orange for the circles, and ink for the black painting upon the yellow green paper.

Books that may be Studied. — The whole subject of ancient Egypt is so interesting, that some may wish to study it further. For those a few additional books are mentioned here.

Egyptian Archæology. G. Maspero.
Manners and Customs of the Ancient Egyptians. Sir Gardner Wilkinson.
Egypt under the Pharaohs. Emil Brugsch.
Egypt, Descriptive, Historical, and Picturesque. G. M. Ebers.
The Story of Ancient Egypt. George Rawlinson.
The Art of Egypt. G. Perrot and C. Chipiez.
Pharaohs and Fellahs. Amelia B. Edwards.
Lower Egypt. Handbook for Travellers. K. Bædeker.
Upper Egypt. Handbook for Travellers. K. Bædeker.
The Age of Fable. Thomas Bulfinch. Edited by Edward Everett Hale.
Life in Ancient Egypt. Adolf Erman.
Egypt, the Land of the Temple Builders. Walter Scott Perry.
Notes on the Egyptian Style, to accompany The Prang Examples of Historic Ornament.

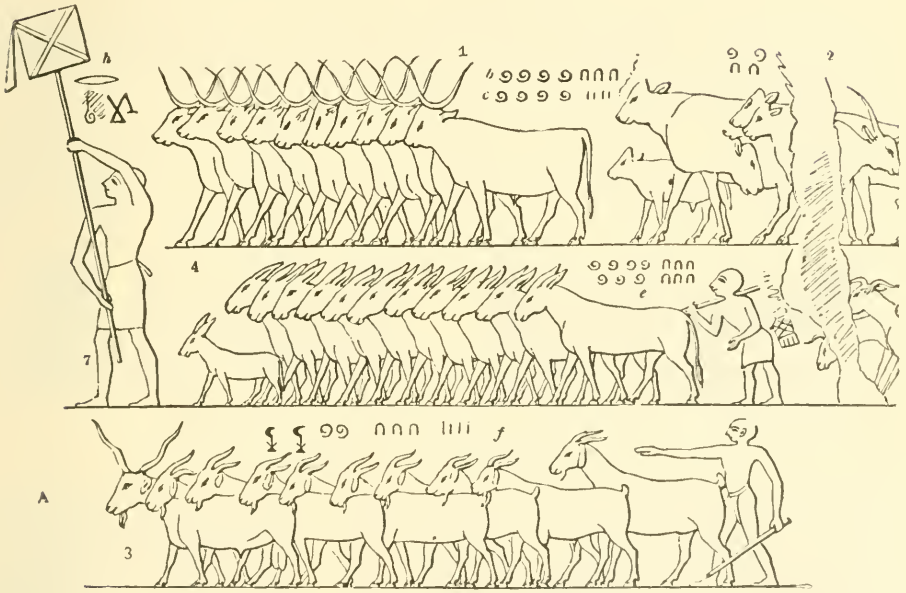
The novels of Ebers give most careful studies of Egyptian life. Among the magnificent folios illustrating Egypt, there may be mentioned those issued by order of Napoleon I. in twenty-three volumes, as well as those of Rosellini, Lepsius, Champollion, and Prisse d'Avennes.

Language Lessons. — The pages devoted to the Egyptian style in the drawing-book give abundant material for written exercises illustrated by the pupils, either by drawings or by selecting examples[1] from illustrated papers and magazines. Such

[1] The Prang Educational Company publish fine half-tones, called "Note Book Illustrations," that are suited for such exercises on Egypt.

exercises lead pupils to research, at once stimulating and beneficial. The following list gives additional books for pupils : —

Family Flights : Over Egypt. Edward Everett Hale and Susan Hale.
Zigzag Journeys : In the Levant. Hezekiah Butterworth.
Herodotus for Boys and Girls. J. S. White.
Boy Travellers in Egypt and the Holy Land. T. W. Knox.
Biography of Livingstone. James Ellis.



From an Egyptian Tomb

BOOK 7, PAGE 12. SIXTH YEAR BOOK, PAGE 12.

DECORATION.

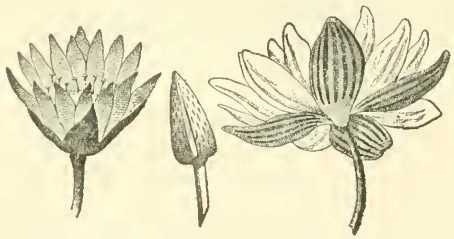
EXAMPLES. — Historic Ornament. Egyptian. Space Relations.
ART. — Selection. Rendering. Expression by Color.

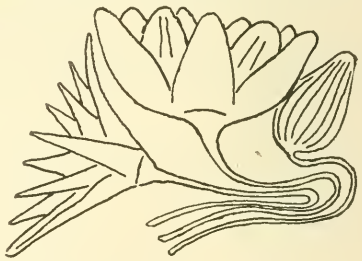
[The pupil studies the units on the drawing-book page, and the application of these and similar units in the borders and examples of surface covering, sketches the units, chooses one for reproduction, and draws it in the book, planning carefully for the enlargement and seeking to retain the beauty of line and space relations shown in the examples; expressing color, if desired, by pencil painting, brush work, or colored paper; at the same time considering the production of beautiful units typical of our present life as these units were typical of the life of the ancient Egyptians.]

The Lotus. — The ancient Egyptians loved flowers and used them on all occasions. They cultivated them in their gardens, they carried and wore them, they used them in their religious ceremonies and immortalized them in their decorations.

They trained and cared for trees also with great assiduity. The illustrations above show trees represented in a symmetric way in their wall decorations.

But preëminent among all decorative motives from plant life, was the lotus flower. There were two varieties, indigenous to Egypt — the blue and the white. There is a little difference between the two flowers, a difference which appears as





well in their decorative treatment. Notice especially the two lower borders on page 12 of the drawing-book as well as the illustration above. The calyx of the white lotus is formed of four long elliptical sepals, green below, rose color on the edges, and strongly marked; the petals are white and rounded like the sepals.

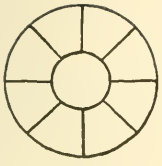


FIG. 1.

FIG. 2.

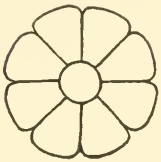


FIG. 3.

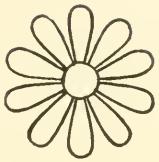


FIG. 4.

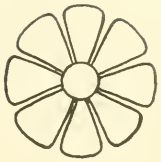


FIG. 5.

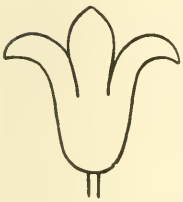


FIG. 6.

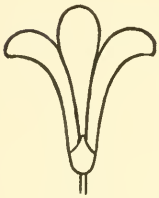


FIG. 7.

FIG. 8.

FIG. 9.

FIG. 10.

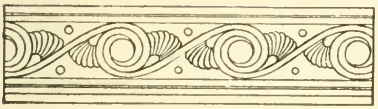


FIG. 11.

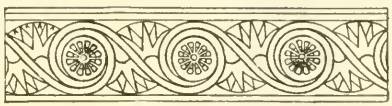


FIG. 12.

FIG. 13.

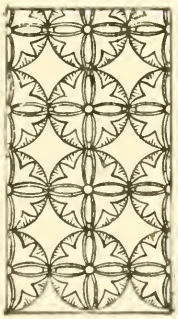


FIG. 14.

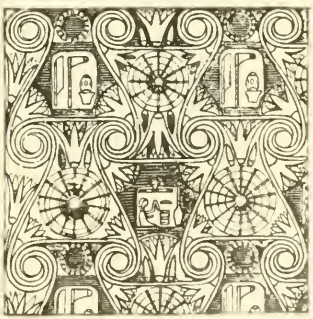


FIG. 15.

A Page of Egyptian Ornament.

The calyx of the blue lotus has four sepals which are lanceolate and powdered with brown; its petals are also lanceolate and a pale blue.

The sepals of both flowers are dark green, showing very distinctly on account of the contrast in color, and are given especial prominence in the flower in ornament.

The drawing and modeling of this symbolic ornament are often marvellous. The sacred lotus flower appears in every conceivable form of outline. It is represented in the bud, as the partly open flower, and as the full blossom upon the stalk. It is placed in the hands of kings; it forms a design about the shaft of columns, a border around the tomb chamber, or the decoration on a throne chair. In two different forms it symbolizes Upper and Lower Egypt. It decorates the capitals of columns, appearing as the bud and as the open flower. It is employed in gold ornaments, and is worn upon the body as an amulet. It is found upon mummy cases. Everywhere its sacred significance is apparent. It is the flower of the resurrection, the pure lily of the Nile, growing from its sacred waters, — the harbinger of coming plenty. The lotus symbol, appearing in thousands of drawings and in relief and color ornaments throughout Egypt, is often very beautifully executed, and illustrates the marvellous power of the Egyptians over line, a wonderful knowledge of proportion in design, and an exquisite sense of conventionalization. Most interesting drawings have been found, showing the gradual development of the lotus form from natural to conventional types; also the combination of the top view or rosette with the side view of the flower, producing what ultimately became the anthemion of Hellenic decoration. It is evident that the Greeks obtained their first conception of the anthemion from the Egyptians.

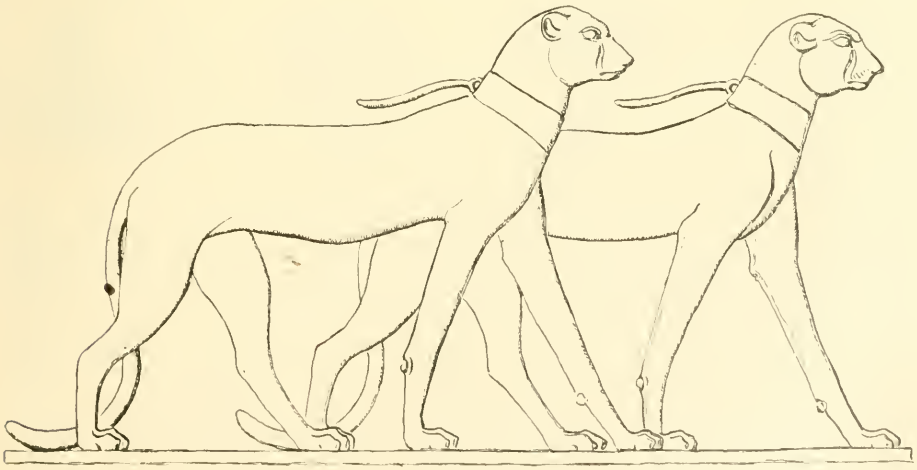
Illustrations on the Drawing-book Page. — Some special examples are now given for this exercise in the drawing-book, leading to the development of Greek ornament. The two smaller figures show what Goodyear calls the lotus trefoil. Comparing these two examples with the lower border at the right, the

tendency in the lotus trefoils to greater curvature, less angularity, and more decorative effect is plainly seen. This tendency develops in the larger figure into the decorative base on which the lotus flower rests, and thus the lotus volute grew. It will be noticed that the examples are not absolutely symmetric. Egyptian ornament did not possess mechanical symmetry, but its bilateral figures are balanced so that the effect of symmetry is given. Notice that in nearly all the examples the top view, as well as the front view of the flower appears. They seem to have wished that none of the beauty of the flower should be lost.

The Exercise. — The pupils are to draw the large unit enlarged in the space at the right, placing it well, and making it of suitable size for the space.

Spirit of the Lesson. — It is hoped that the teacher may be able to make the lesson so interesting, and the example so full of meaning, that the drawing will not be a mere copying of a decorative figure, but rather a sympathetic and intelligent exercise, entering into the symmetry, proportion, and curvature characteristic of the style. The large example has a slender elegance in its proportion, fine curves and a careful observation of the laws of growth, the radiating petals all proceeding from within the calyx.

And it is hoped also that the pupils may feel that the lotus in these various decorative forms was thoroughly a part of Egyptian people and their life. Lead them to think how they might study our own flowers and obtain from them graceful and beautiful units that might stand as typical in some way of the life of the American people.



BOOK 7, PAGE 13. SIXTH YEAR BOOK, PAGE 13.

DECORATION.

EXAMPLES. — Historic Ornament. Greek. Space Relations.

ART. — Selection. Rendering. Expression by Color.

[The pupil studies the examples on the drawing-book page, sketches one or more, chooses one, and reproduces it enlarged in the book, studying to express the beauty of line and of space relations, using pencil, brush and ink, or colored paper; and considers also how the principles of beauty shown in the Anthemion might be shown in an ornament for the present century.]

The Greek Style. — Entering now on a style of ornament belonging to a people and a country very different from that of Europe, it is extremely interesting to see how Egyptian influence may be traced in Greek ornament. As this exercise is in direct sequence with the preceding exercise on an Egyptian unit, thought will be directed here to that sequence. The characteristics of Greece as a country and of the Greek people are treated in this manual on page 184, where succeeding exercises are taken up.

Anthemion. — The anthemion is one of the most characteristic of Greek forms. It exemplifies most perfectly the beauty of radiation, of tangential union, of proportional distribution of spaces or areas, — three great laws of design. Note in the anthemion, Fig. 4, the proportional distribution of spaces, the

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

central lobe being the largest, the other lobes decreasing symmetrically on each side. The whole figure is made compact by the enclosing lines, the ends of which form spirals or volutes, which harmonize with the lobes.

It is a joy to study the transition from the uprightness of the central lobe through greater and greater curvature of the other lobes to the scrolls at the base, and to see how the mediation between erectness and full graceful curvature has been achieved, and how there has been thus produced one harmonious whole through strength and grace.

By study of the Egyptian palmettes, it will be seen that, while the Egyptians approached this beauty, yet they did not reach the perfect harmony of the Greeks. Figures 1, 2, and 3 are Egyptian examples previously presented. The Egyptian palmettes seem to show rather a combination of two parts, the palmette itself, so to speak, and the scrolls or volutes, rather than that unapproachable sense of one whole given by the Greek anthemion.

One of the secrets of the tending of each lobe to the others in such perfect grace is the underlying tangential union. A skeleton of this figure shows that if the axis of each lobe is extended downward, all unite tangentially within their stem; so that there is not only an external union, a union of seeming, but an interior or real union, a union of being. Figures 1 and 2 show the leading lines of two variants of the anthemion, and illustrate the beautiful tangential union and radiation in the figure. And finally, in the anthemion, the scrolls flow out and around in perfect continuance, meeting at the top in such a way as to gently emphasize the aspiration and up-springing of the central lobe. Many lessons of the beauty of grace and harmony in conduct as well as in form may be drawn from the anthemion.

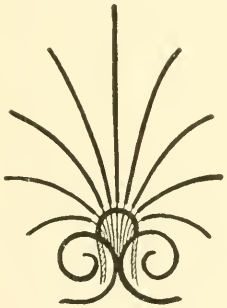


FIG. 1.

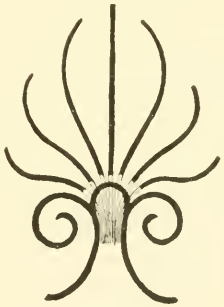


FIG. 2.

Relation to Nature. — It was formerly supposed that the motive of this Greek ornament was from the honeysuckle. That theory has been given up. But it is recognized that it embodies most wonderfully the laws of beauty which underlie all plant growth. Compare the illustration of the leading lines of the anthemion, with the drawings given by Ruskin in his "Elements of Drawing," and reproduced below as typical of tree structure. He says: —

"Now, remember, nothing distinguishes great men from inferior men more than their always, whether in life or in art, *knowing the way things are going*. Your dunce thinks they are standing still, and draws them all fixed; your wise man sees the change or changing in them, and draws them so, — the animal in its motion, the tree in its growth, the

cloud in its course, the mountain in its wearing away. Try always, whenever you look at a form, to see the lines in it which have had power over its past fate, and will have power over its futurity. . . .

"So in trees and general bushes, large or small, you will notice that, though the boughs spring irregularly and at various angles, there is a tendency in all to stoop less and less as they near the top of the tree. This structure, typified in the simplest possible terms at *c*, is common to all trees that I know of, and it gives them a certain plumy character and aspect of unity in the hearts of their branches which are essential to their

a *b* *c*

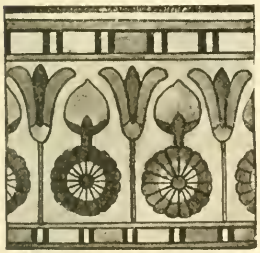
beauty. The stem does not merely send off a wild branch here and there to take its own way, but all the branches share in one great fountain-like impulse; each has a curve or a path to take which fills a definite place, and each terminates all its minor branches at its outer extremity, so as to form a great outer curve, whose character and proportion are peculiar for each species; that is to say, the general type or idea of a tree is not as at *a*, but as at *b*, in which, observe, the boughs all carry their minor divisions right out to the bounding curve."

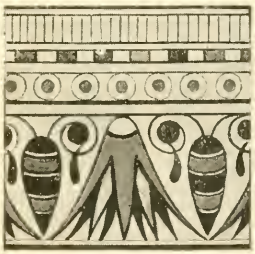
The anthemion seems to be a remarkable illustration of that of which Goethe spoke when he said, "The beautiful is a manifestation of secret laws of nature which, but for this appearance, had been forever concealed from us."

Relation to Egyptian Ornament. — The two pages in the drawing-book, pages 12 and 13, give an admirable opportunity for a comparative study of characteristics of Egyptian and Greek ornaments. Notice on the one hand the devotion to symbolism, the lotus, the scarab, the feather, the double scroll, — on the other hand the forgetfulness of all symbolism, the search for pure beauty, its production being always governed by a recognition of its laws. But we can trace the development of the anthemion from the simple three-lobed unit of the Egyptians on page 12 of the drawing-book to the Greek anthemion so perfect in its harmony. The illustrations on page 13 of the drawing-book show how the Greeks treated the anthemion. Having made its principles their own, they varied its proportions and the number of its parts at will, as the Egyptians also did with the lotus. While the Egyptian ornament is elegant in its drawing and its arrangement, Greek ornament shows greater and more subtile thought and appreciation of pure beauty.

Suggestions to the Teacher. — Greek ornament was largely the work of the brush, and if school conditions allow it, it will be well to have pupils select some example, or part of an example, to work it out with the brush. The remarkable beauties of the anthemion can in no way be so well felt as through its reproduction. The purpose is not to secure a reproduction of some particular example, but to lead the pupil through study and drawing to a feeling for the principles of beauty which enter into it. Not only freedom but also a strong feeling for the beauty sought is essential for the work. A good preliminary practice for the brush is to select some simple element and produce it many times with the brush until facility is obtained.

The anthemion also gives opportunity for good, wholesome drawing with the pencil. Its gradations in curvature and proportion are so wonderful that no figure affords a better opportunity for well-thought execution. If the anthemion is worked out in colored paper, the colors used should be, as a general thing, in the grays, preferably the red, orange, and yellow grays (assortment F) for Greek ornament, as more nearly approaching the color of the burnt clays. The green, blue, and violet grays (assortment FF) will not, however, be inappropriate.





BOOK 7, PAGE 14. SIXTH YEAR BOOK, PAGE 14.

SPACE RELATIONS.

EXAMPLES. — Mouldings. Door Casings and Window Frames.

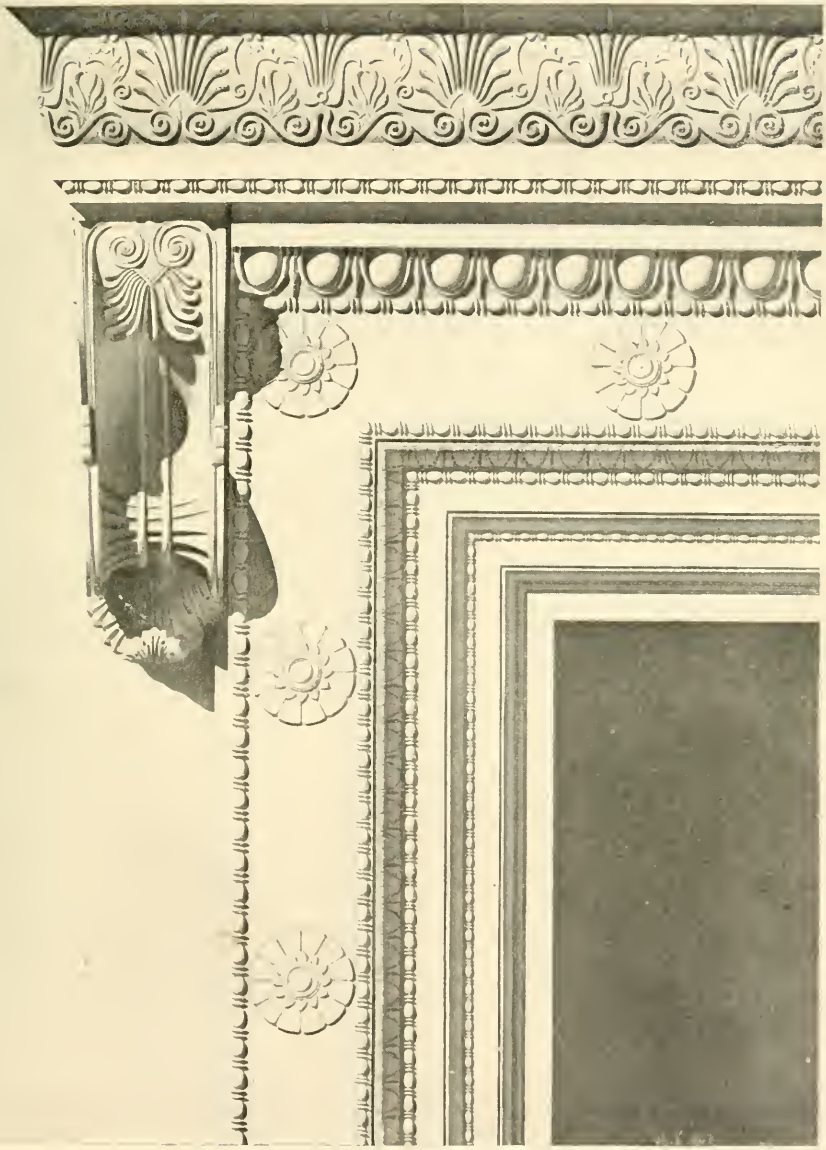
ART. — Selection of Historic and Modern Examples. Appreciation. Original Composition.

[Lead the pupils to make sketches of the mouldings in the casings to doors and windows in the schoolroom and elsewhere, to study the examples on the drawing-book page, to plan for a simple design of their own, showing beauty in the spacing of the mouldings, and to draw the design in the books.]

The Examples. — The doorway from the Erechtheion, illustrated on the drawing-book page, is perhaps the most celebrated doorway in the world. The Germans call it "the doorway of magnificence." It is represented in four ways — the two upper illustrations being pictorial, while the two lower are constructive. The first illustration shows the doorway at an angle, giving an idea of its appearance from the side. The second illustration gives the appearance of the whole doorway from the front, showing the crack in the capstones and the wooden frame that has been placed within the doorway to prevent these stones from falling. The relations of the various mouldings to each other can be seen in the third drawing, while the proportion of the whole can be seen in the fourth.

Preparation for the Lesson. — Study the examples on the drawing-book page. Lead the pupils to discover that the illustrations are of the same doorway. They may be able to find out for themselves that the style is Greek, from the rosette and other detail they may have studied or drawn previously.

Why is this doorway beautiful? The pupils may answer because of its ornamentation. Lead them to observe the perfect construction, the refinement, the repose — the suitability and the true significance of the ornament, to see also the beautiful spacing and distribution of the ornament. Call special attention to the beautiful spacing of the rosettes. They are seemingly quite a distance apart, and yet there are enough. The uncovered space seems balanced by the rich mouldings above. Note the difference in width of the uncovered spaces, — about the door the varying width of the mouldings. These varying widths add beauty and prevent monotony. Lead them to observe that while the ornamented mouldings give richness and weight, the undecorated spaces give lightness and grace. Tell them that this doorway is from the Erechtheion, a very beautiful marble temple on the Acropolis at Athens, that



From the Doorway of the Erechtheion.

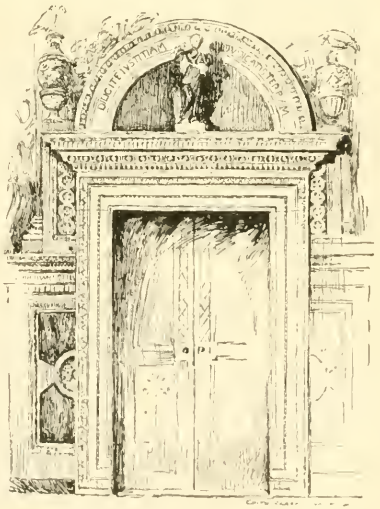
contained something very sacred and precious to the Greeks, and therefore a great deal of thought was put into every part to make it beautiful. See page 196 for a description of the Erechtheion. A porch of this temple is illustrated in Book 8, page 16; Sixth Year Book, page 32. This doorway, as illustrated in the drawing-book, might serve in any art course as an illustration of balance, perfect construction, refinement in representation, and true significance in decoration.

•

The doorway is always an important feature in a public building, and gives the characteristics of the architecture with which it is used. Ask the pupils to mention any beautiful buildings they may have seen, and to recall anything they can of the doorways.

Let them look for mouldings like any part of the Erechtheion doorway — they may find a moulding like the upper part, perhaps without the ornament or some other part. A full-page plate of this doorway is given here that the relations of the parts to each other and their varying widths, through which monotony is avoided, may be studied.

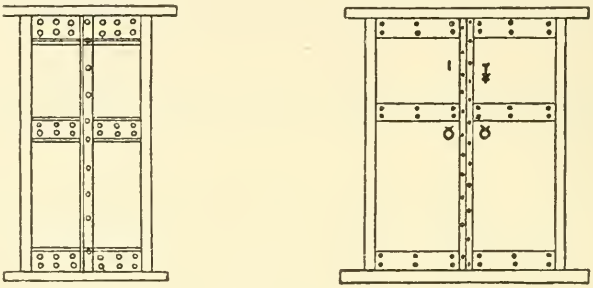
There are many other very beautiful doorways. There is one on the third floor of the Palazzo Vecchio, in Florence, illustrated here, that is celebrated for its beauty.



Give opportunity for the study of door mouldings, window frames, and picture frames in the schoolroom and school building. Lead the pupils to tell you that the doorway for the entrance to the schoolhouse should be more important than the doorway for the schoolroom: that the door of a church should differ from the door of a library. Ask them to design a simple doorway for a room, or for the entrance to an ordinary house.

Lead the pupils to see the purpose of a moulding or frame about a door or window. It is a mechanical necessity; it gives strength. To break the surface of these frames into well-planned spaces adds the element of beauty. If the door is very large a wider moulding is required and there is more opportunity for ornament. In the small doors for entrance to the rooms in a house there is little opportunity for decoration — except in the way of straight lines or possibly a simple rosette in the corner.

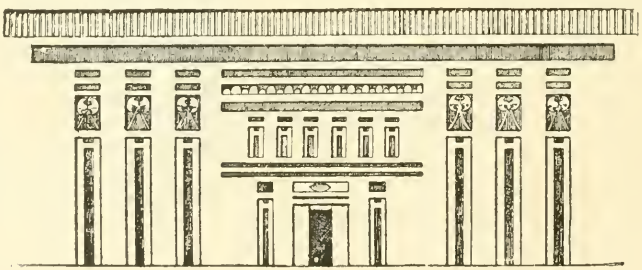
The illustration below of two Greek doors taken from vase paintings shows some of their ideas of division. In these we see the threshold, lintel and side posts with iron bands riveted to the wood of the doors and on one of them there are rings to serve as handles and keyholes by which the latch was shoved backward and forward.



The Exercise. — Make sketches on practice paper of the example in the book, without the ornament in this case, giving special study to the spacing of the mouldings.

Make sketches on practice paper of a design for a doorway or window frame, showing only a corner, as in the lower illustration in the drawing-book. This may be treated without ornament, except in the variation of the width of the spaces. Groups of lines near together will balance the plain spaces. Give careful thought to the placing of the design upon the drawing-book page.

Added Interest. — The study of spacing by the Egyptians was quite remarkable, as shown by the illustration below from a sarcophagus.



BOOK 7, PAGE 15. SIXTH YEAR BOOK, PAGE 15.

ILLUSTRATIVE PAGES.

FLOWER COMPOSITION. — Arthur W. Dow.

Illustrations. — The examples show beauty of space relations, as seen in flower compositions by Mr. Dow. See pages 48–50. They show beauty of space relations by contrast of vertical and oblique lines, as well as by contrast of large and small spaces, and through grouping and repetition. In many of these compositions where but two flowers are used, one flower echoes the other with a lighter touch, as if rhythm were intended. The arrangements from the Japanese are very suggestive, but with a very different feeling from those of Mr. Dow.

Arthur W. Dow, born at Ipswich, received a prolonged classical education, studying Greek and Latin and Hebrew, besides several modern languages. At the same time he did not overlook the attractions of nature, and sketched from the beautiful landscapes about him. He determined to become a painter, and studied abroad for five years.

In 1889 he returned to America, and has been steadily winning recognition as a landscape painter. He is especially a student of composition. He believes that while nature suggests, art creates, and that the creative faculty far surpasses the imitative. He has for years been working upon the principles of composition, and exemplifying them through his own works and those of his pupils. He has recently published a book called "Composition."

Some of his compositions in black and white are given below, showing the different effects obtainable in different subjects, by the different distribution of the black and white.

BOOK 7, PAGE 16. SIXTH YEAR BOOK, PAGE 16.

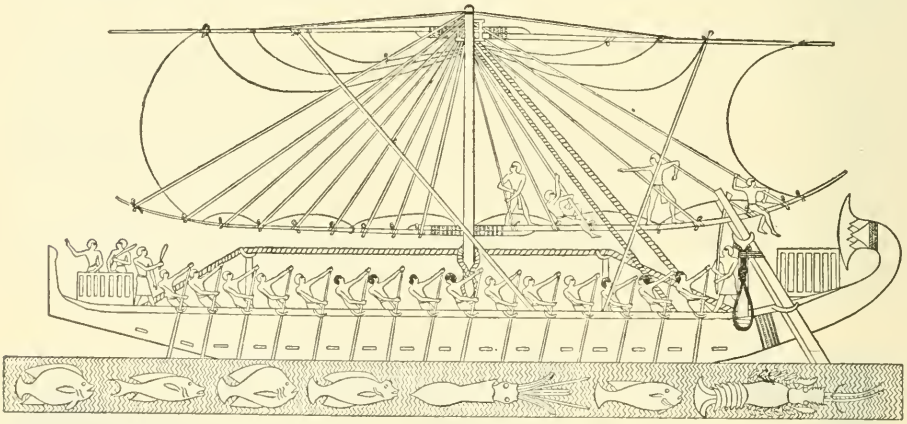
ILLUSTRATIVE PAGES.

EGYPTIAN ART. — Sculpture, Painting, and Architecture.

Illustrations. — The examples chosen serve to give a general idea of the works of this wonderful people. The Colossi of Memnon and the sphinx and pyramids bear testimony to the colossal nature of their conceptions. Some idea of their size will be gained by comparing their height with that of the men and camels grouped about them.

The manner of tomb painting and of temple painting is also clearly shown. These illustrations will serve to add to the ideas which the pupils have gained concerning the Egyptians, and they will be found very helpful in connection with the study of Egyptian ornament.[1]

These illustrations are all described or alluded to in an explanatory way in the text for page 10 of the drawing-book.



EGYPTIAN BOAT.

[1] The Prang "Note-Book Illustrations," Egyptian style, six in number, accompanied by descriptive text, will be of great interest to both teachers and pupils. They are intended for note-book use.

BOOK 8.

SIXTH YEAR.—SECOND HALF.

The Prang Elementary Course in Art Instruction is published in two separate editions, prepared to meet the varying conditions of the use of one or two books a year. In the edition providing for the use of two books a year, the books are designated as "No. 1," "No. 2," "No. 3," "No. 4," "No. 5," "No. 6," etc.; in the edition providing for the use of one book a year, the books are named "Third Year," "Fourth Year," "Fifth Year," etc. This manual text has been especially prepared to meet the needs of both editions.

BOOK 8, PAGE 1. SIXTH YEAR BOOK, PAGE 17.

ILLUSTRATIVE PAGES.

FIGURES.—Edwin H. Blashfield. Anna E. Klumpke.

The Examples.—These illustrations of figure-drawing are most interesting in their contrast. The two dancers in "The Saraband" are expressive of movement, while "The Little Reader" is at rest, absorbed in her book. "The Saraband" is a finished drawing of a stately Spanish dance; "The Little Reader" is a study for a picture.

Edwin Howland Blashfield is an American artist, well known through his decorative work. His subjects appeal strongly to the imagination. His decorations in the Library of Congress, presenting "The Human Understanding" and "The Progress of Civilization" are among his latest works. The dignified and graceful character of his work is well shown in "The Saraband."

"The Progress of Civilization" passes around the collar of the dome in the great central rotunda of the Library. It contains twelve colossal figures, representing twelve nations or epochs, symbolically treated. These figures are separated by twelve tablets, which mark the rhythm of the whole. Egypt (Written Records) wears the sign of immortality; Judea (Religion) holds stone tablets bearing Hebrew inscriptions; Greece (Philosophy) shows the symbol of a lamp; Rome (Administration), as is fit, has the baton of command; Islam (Physics), representing the Arab and Saracenic people, holds a book and a glass retort; The Middle Ages (Languages), having the features of Mary Anderson, wears a sword for chivalry, and is accompanied by a model of a church for architecture, with keys and a crown typifying the church; Italy (The Fine Arts) holds a statuette of Michael Angelo's "David" and a palette, and rests her foot upon a capital; Germany (The Art of Printing) holds a proof-sheet, and an early printing press is beside the figure; Spain (Discovery) has as symbols the rudder of a ship and the model of a caravel; England (Literature), a portrait of Ellen Terry, holds a volume having the title-page of "Midsummer Night's Dream"; France (Emancipation) is sitting on a cannon, and holds a declaration of the rights of man; America (Science), with the head of Abraham Lincoln, is accompanied by a book and a dynamo.

The continuity of the decoration is secured by the overlapping of the outspread wings of the figures. There is also a background of mosaic patterning. Thus the structural poise of the whole is maintained. The colors are white in the

wings, blue-green in the background, and violet in the bands. The draperies of the figures grade from white to violet, shading into yellow and orange. The whole is extremely harmonious in color. As it should be in a dome, there is no sense of weightiness in the composition; on the contrary there is aspiration, attained through the exalted conception and through its fine treatment.

In the centre of this collar is a female figure, accompanied by two boys, representing "The Human Understanding." The whole composition accords with the architecture, the figures being well fitted to their surroundings.

Mr. Blashfield has produced another fine decoration typifying "Music and The Dance" for the Astoria Hotel in New York. Graceful figures typifying "Music" for one end of the ceiling and "The Dance" for the other end, float through an atmosphere of sky and cloud — gray and blue and pink and violet and white — melting and flowing into one another. It is a beautiful conception, full of joy and delight.

Mr. Blashfield has also painted fine easel pictures. The "Christmas Bells" is well known. There is another full of religious feeling, — "The Angel with the Flaming Sword," — strong, simple, and expressive.

The Saraband was, according to Vuillier, a noble and impassioned Spanish dance of the sixteenth century. It was generally danced by women to the guitar. Sometimes dancers of the Saraband were accompanied by the guitar and voice, which were sustained by flutes and harps. The airs of the Saraband were very popular. The rhythm and cadence gave to the ear the impression of slow and flowing movement. There is a charming picture by Roybet of two little ones dancing the "Saraband."

Anna E. Klumpke is of American birth, and is of a very gifted family. Her art study has been largely abroad, and she is an exhibitor in the Paris Salon. Her work is largely portraiture, but her figure compositions have won for her rank at home and abroad.

The picture for which the study of "The Little Reader" was made is owned in Russia, where Miss Klumpke has traveled extensively.

Probably her most valuable work is a portrait of Rosa Bonheur, painted at the great artist's request a few weeks before her death. Miss Klumpke is something besides an artist. She holds the degree of Doctor of Mathematics from the Sorbonne, in Paris, and has been employed in the French Bureau of Measurements. Her portrait is the last one ever painted of Rosa Bonheur, and is said to be one of the best ever executed.

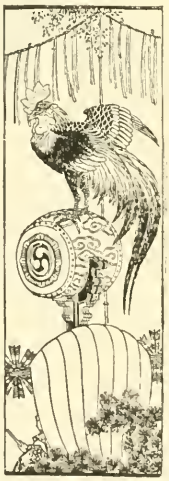
BOOK 8, PAGE 2. SIXTH YEAR BOOK, PAGE 18.

ILLUSTRATIVE PAGES.

STILL-LIFE AND LANDSCAPE.— Hokusai's Daughter. Hiroshige.

Illustrations. — The difference in effect in these illustrations is at once apparent. The groups of still-life on the left are from original water-color drawings; the landscape on the right is an example of fine block printing. In all these illustrations, the original color values are well kept in tones of light and dark.

Katsushika Hokusai, generally spoken of as Hokusai, in his prime between 1800 and 1820, is called the greatest of Japanese artists. He was born in 1760, in a quiet quarter of Yedo full of gardens and flowers; he died April 13, 1849. He says: "From the age of six years I had a passion for drawing the forms of objects. Toward my fifteenth year I had published a number of designs." In his work he was truly universal; he drew and painted temples, palaces, houses, landscapes, flowers, insects, fish, birds, trees, gay or sad subjects, real or imaginary life, all equally well. He became known through his illustrations called "The Mangwa," or "Collection of Ten Thousand Sketches," in fourteen volumes. This book was begun because of a growing desire among artists and artisans for his drawings as examples.



He found time in the midst of other work to design very beautiful "surimonos." These are small sheets designed by the members of art societies, and by poets, to commemorate certain events, especially the new year.

He also made at least twelve drawing-books and illustrated scores of books. His finest landscapes are thirty-six views of Mount Fuji. "These views are perhaps, taken as a whole, the most superb set of landscape compositions — in the technical sense of the word — ever made in the history of the world's art."

His desire was, in his own words, to "hand down to future ages and bring within the knowledge of our remote fellow-men beyond a thousand leagues, the spirit and form of all the joy and happiness we see filling the universe."

The two illustrations of his work given here are very characteristic. The drawing in both is most careful. In the one on this page, the curve of the figure answers to and complements that of the fish, while the swirl of the waters holds all together.

He had many notable pupils, and a talented daughter who assisted him in his classes. The reproductions in the drawing-book were made from water-color drawings by her, now in the Museum of Fine Arts, Boston. They show fine composition and appreciation of color values. It must be remembered that many of the Japanese objects, while beautiful in texture and general form, are yet irregular, and this irregularity is seen in the drawing of the bowl, of the bamboo flower-holder, and of the covered box. The directness of the drawing shows an intimate acquaintance with the objects, and expresses much more than merely a drawing from an object.

Long practice with the brush is given in Japan in what would be called here drill exercise, before anything like drawing from an object is undertaken. The brush is held vertical, and rather far from the point, and a very steady line is expected. It is only through much, very much, practice that the wonderful Japanese skill is attained.

Hiroshige was born at Yedo in 1786 and died in 1858. He was, in his early days, a fireman, but afterward one of the most original and talented pupils of a great Japanese master. He made many single-sheet color prints, but finally became one of the greatest portrayers of Japanese landscape. It is said that Hokusai was rivaled in landscape only by Hiroshige. His paintings are rare, but they show consummate mastery of the brush.

The composition of the landscape illustrated in the drawing-book is worth careful study. The curving oblique lines mediate between the vertical and horizontal; the space divisions are in beautiful relation to each other. The scene is characteristically Japanese, with Fuji-Yama in the distance, — Fuji, whose strong, beautiful lines and lights and shades dominate all Japan, and which is an object of loving adoration.

BOOK 8, PAGE 3. SIXTH YEAR BOOK, PAGE 19.

REPRESENTATION.

BEAUTIFUL OBJECTS. — Form. Appearance.

ART. — Selection. Composition. Rendering.

[The pupil selects and arranges beautiful objects and sketches them, decides upon an arrangement that shows a beautiful aspect and good composition, and draws it in the book, studying the example for rendering.]

Beautiful Objects. — The beginning of conscious power in drawing is often marked by the fine feeling shown by the pupils for objects from which good sketches can be made. In this year's work objects good in form and strong in color are readily appreciated by both teacher and pupils.

"To adorn all he touches is the raison d'être of every artist. The blacksmith, the illuminator, the cabinet-maker of the Middle Ages, put his whole conception of the beautiful into his productions, whether it was the iron work of a box or a candlestick, an ornamental letter, or a piece of furniture. There is as much beauty in a Greek vase as in the sublimest statue; and the man to-day who makes a stoneware pot, adorned with all the magic of the fire and radiant in the rich splendor of its material, holds in the eyes of all who really understand what art means, a place of equality beside the masters of the brush and the chisel.

"There is no such thing as inferiority in art; one may exhibit just as much originality, talent, and genuine merit in shaping a pot or a vase, or any other article of daily use, as in transferring some picturesque scene on to canvas." — GABRIEL MOUREY.

Different materials are susceptible of, indeed require, different treatment, even in their manufacture.

"Vases may be manufactured in pottery, metal, or in stone. In each of these classes special treatment will be required. In a vase made of clay the soft plasticity of the material lends itself to a free, bold, and full contour, such as would be difficult to obtain in a vase carved out of hard stone. Then a vase in metal could have finer and smaller mouldings and projecting details than would be possible to either pottery or stone.

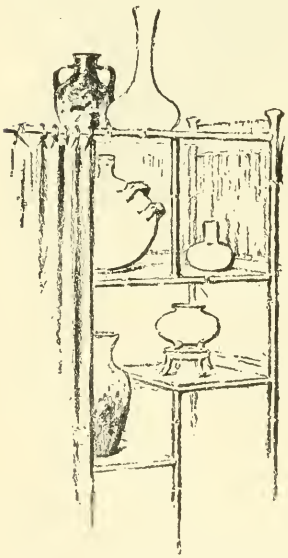
"It will also be seen that a vase manufactured from clay will need a broader foot for support of the superincumbent weight than one made in bronze or iron, the strength of these metals in comparison to their bulk being much greater than that of clay."

An important feature of constructive design is this trained judgment, which comes from a constant exercise of eye and hand and a true feeling for and appreciation of the beautiful. Manual training has proven that some pupils are strong on the con-

structive side who have little or no power to express their creative ability in the graphic arts. Walter Crane has always felt very keenly the true democracy and inclusiveness of art, and is constantly preaching its gospel.

"If art depends upon labor, labor also depends upon art. The architect must plan the house before the laborer can get to work, and designs of all kinds must exist in the head before they can be executed by the hands. What we want is to bring heads and hands together again, and on the same shoulders, and not keep them as classes apart." — WALTER CRANE.

Preparation for the Lesson. — The selection of a beautiful form, and one adapted to use as a receptacle for flowers, should be considered by teacher and pupils as a preparation for this lesson. A vase suitable for holding a long-stemmed flower or a few flowers should be small at the top, there should be a large space below in order to hold plenty of water, and there should be a broad base to insure solidity and support. Vases for containing flowers are not always adapted to their purpose. Lead the pupils to study the example on the drawing-book page, — the beauty of the whole composition, the grace and richness of the flower, the fine form and color of the vase. Lead them also to observe the beauty of the Japanese design from the chrysanthemum. The fineness of the movement and rhythm in these borders is promised by the beautiful balance and graceful curve of the flower in the vase. Let them study the expression of color in the Japanese borders, and try to understand what it means to express color in a pencil drawing. Then let them study the colors in the flower and vase, — the green leaves, the yellow or white blossom, the rich dark brown or dull red varying to a lighter tone in the vase. Let them look also at the illustrations of Japanese water-color drawings (Book 8, page 2 ; Sixth Year Book, page 18) and note the different expression of color.



VASES ON BAMBOO SHELVES.

"The rustic family of ox-eyes claim
A royal cousin, clad in purple,
Pearl, ruby, fleecy colors such as fold
The couching sun, and with a lofty name,
Chrysanthemum, — appearing proud
To startle poor November with a flame
Of sumptuous flowers, making summer tame,
And flush with Eastern pomp the dark and cold."

— WILLIAM ALLINGHAM.

Suggest to them to look in shop windows or in their homes for objects as beautiful as the vase in the drawing. If there is not a supply of such objects at hand, get the pupils to bring them or dealers to lend them. There is increasing generosity on the part of dealers in fine wares, shown in their willingness to lend beautiful objects. The flowers may be obtained from the homes of the children, the chrysanthemum being common both in cities and in villages. Cosmos, and other beautiful composite flowers, can also be found.

Suggestions for the Exercise. — Help the pupils to select either a beautiful vase or two beautiful objects, or a fine vase with a beautiful flower, and to arrange the study or studies so that the light will bring out the greatest beauties of the objects. Ask them to sketch from the study, keeping in mind the drawing in the book as a suggestion for rendering. The dark color of the pottery is shown plainly in the dark treatment of the vase. While the effect as a whole is very broad and simple, the depth of shade is evident where the vase rounds away from the light. The high light is strong, showing that the texture is hard and glazed. The smoother the glaze, the sharper the high lights and the stronger the reflections.

Observe that the petals of the flower lose their definite form in the high light. See how admirably the peculiar texture of the chrysanthemum petals is shown as they turn from the light.

In drawing, its beauty can only be suggested. If each detail is carefully drawn and considered by itself and not as related to other parts and the general effect as a whole, with one part made just as prominent as another, the result may have some value as a botanical diagram, but it will not be a work of art, for art is not imitation, but suggestion.

To secure a condition favorable for good results be sure that the pupils are far enough away from the examples studied to see their beauty as a whole. Let the pencils be soft, rather than hard, not too sharp, and held long and easily. Ask the pupils to study what they are about to draw a few moments in relation to the direction of the light and the effect produced upon the group and to place mentally the group within the space and to consider how and where to get the best possible effect upon their space. If pupils did a little more thinking before starting to draw, there would be fewer failures. Let all the first lines be very faint, just considerations of the space and the leading lines so as to avoid disturbing the texture of the paper by erasing.

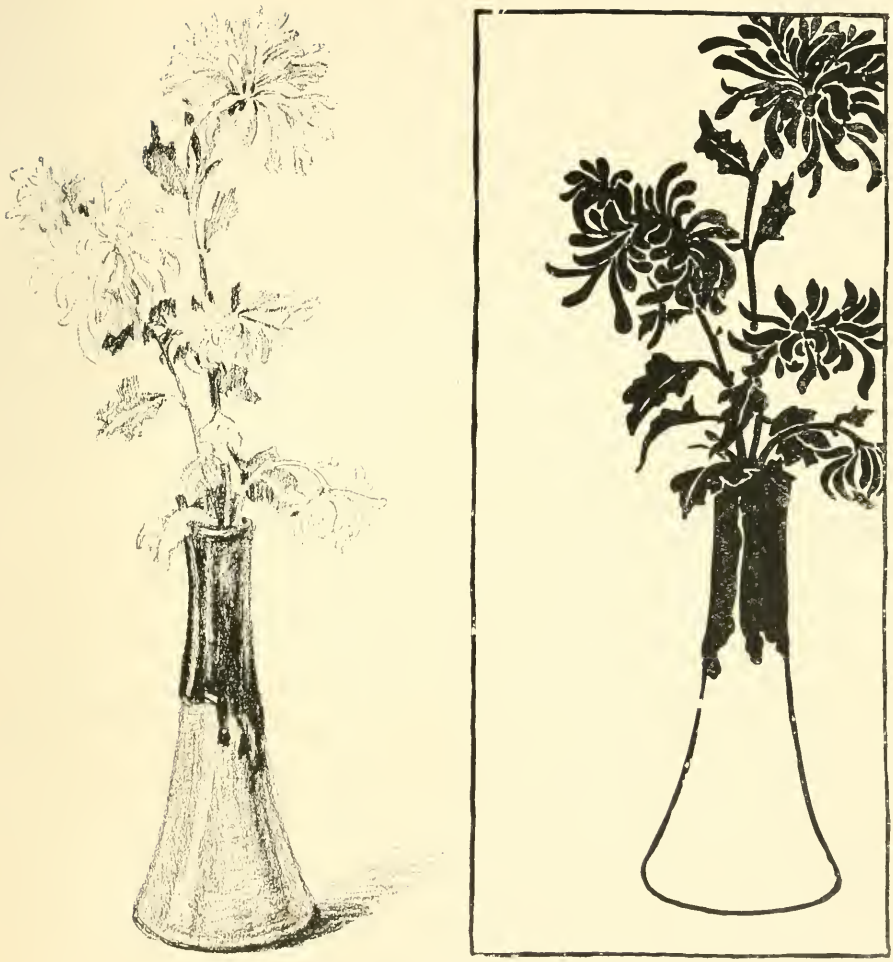
Light and Shade and *Light and Dark* are terms often heard. Effects in light and shade are produced by considering and treating the objects or groups to be drawn in relation to the effect produced upon them by the light that falls upon

them. When possible a direct rather than a diffused light is the more desirable — usually from the left and above. This can be obtained by closing the shutters or drawing the curtains at the right of, or behind the pupils, and closing the lower shutters at the left. The highest light will then be evident, as well as the shade and the shadow which is cast by the object or group of objects. If a shadow-box is used this cast shadow will be more or less definite in shape and may fall not only on the horizontal plane but also on the vertical. The rendering of texture is much helped by the shape of the shadow. A wooden sphere will cast a more definite and clear-cut shadow than an orange or a worsted ball. The shape of shadows should receive careful attention, the outline of the shadow being as essential an object of study as the contours of the solids casting them.

Light and dark relates more to color than to the appearance of forms as affected by light and shade. Light and dark may be considered in connection with light and shade, or only as tones of color. In the group in the drawing-book page the contrast of *light and dark* is very marked between the dark vase and the light flower, and there is also some effect of *light and shade* upon both vase and flower. The Japanese borders are treated in light and dark, the tones are kept flat and without modeling or any attempt to introduce light and shade. The section of one border is in two tones, gray and white. The one beside it is carried out with gray and black. Below, the longer border shows three tones, white, black, and gray. Such treatment is most effective when carried out in a full tone of black ink for the greatest dark (india ink when possible), the ink slightly diluted for the gray tone, and the white of the paper left for the white. Pencil painting may be used for such effects, but care must be taken not to glaze the paper by using too much pressure, and it will be well to lay a piece of thin paper over the completed work, to avoid smearing the opposite page. *Light and dark* is often used with good effect for very simple landscapes to illustrate good, simple composition. The method is also used for flowers producing a decorative effect.

If the pupils should succeed in their pictorial study, they can try a composition of the flower in an oblong in black and white, as suggested by Plate XII.

If this drawing-book is used in the spring instead of the fall, this page may be reserved until peonies, snowballs, or roses can be procured; any flower, in fact, characteristic in form and requiring breadth of treatment to secure artistic effect. If roses are used, contrast in color (light and dark) may be brought out by placing a dark rose in a glass vase, or a white rose in a dark vase. The treatment of a



Studies of Chrysanthemums. — Pictorial and Decorative Composition.

white rose in strong light should be very delicate on the side toward the light. Sometimes a slight suggestion of background on the light side will bring out the shape without making the petals appear hard and unnatural. The pupils may be helped to see what is meant by treatment showing "color" in pencil work and "effects in *light and shade and light and dark*" by studying the illustrations in current magazines and in illustrated books. Such examples may be brought to the schoolroom and passed about among the pupils. Guard against the formation of a critical spirit in the pupils in regard to these examples. Lead them to look for and to appreciate the good work that is brought in, and to pass by quietly any unworthy examples. "Silence is golden" may be a most pertinent proverb at this time.

"White like a white rose, not like these that were
Taught of the wind's mouth and the winter air,
Poor tender thing of soft Italian bloom,
Where once thou grewest, what else for me grew there?"

"The year of the rose is brief;
From the first blade bloom to the sheaf,
From the thin green leaf to the gold,
It has time to be sweet and grow old,
To triumph and leave not a leaf."

— SWINBURNE.

BOOK 8, PAGE 4. SIXTH YEAR BOOK, PAGE 20

REPRESENTATION.

OBJECTS. — Form. Appearance. Light and Shade. Light and Dark.
ART. — Selection. Placing. Choice of Aspect. Rendering.

[The pupil selects simple objects of good form and color, places them in a pleasing position, studying the effects of light and shade, chooses the arrangement that gives the best effect, and draws it in the book, expressing the light and dark of the object, and the effect of light and shade on the object.]

Light and Dark. Light and Shade. — In the preceding exercise the attention of the pupils has been called to the expression of the green leaves, and the white, or nearly white, blossom of the chrysanthemum, and of the rich, dark color of the vase. These are qualities of dark and light in color, in the objects themselves. In the present exercise the pupils are called upon, not only to represent an object as light and dark in itself, but as affected by the light around it, which illuminates one part of the object, and leaves the rest dark. This double problem of expression is difficult unless the objects are well chosen. The object represented in the example given on the drawing-book page is dark brown and light gray, and is glazed.[1] The light strikes the object on the left, and is also reflected in the glaze. All these points are shown in the drawing by the management of dark and light masses. Notice also the Japanese illustrations (Book 8, page 2; Sixth Year Book, page 18.) These show color rather than light and shade.

There is a good chance here to dwell slightly upon "fitness to purpose." We would call this object a pitcher, and it is evidently intended for domestic purposes. The same form in England is spoken of as a jug, while in Japan, the father-land of so many beautiful forms in pottery and porcelain, this shape is unknown, and "pitchers" or "jugs" are made only in a limited quantity for foreign markets. An English writer, in commenting upon good design in the household, says: —

"The well domesticated modern designer is the man we must pray for. It is not enough that he shall select Della Robbia ware for emulation, if he have not a good knowledge of the exigencies of the household. What is the good to me of a milk-jug that costs ten-and-sixpence, and pours out at three places at once, and that no ordinarily

[1] The Prang Educational Company has had a large variety of pottery manufactured by the best Japanese houses, for the purpose of furnishing primary and grammar schools with fine examples of beautiful form and color as material for study. The best teachers everywhere are feeling the need of such material in the schoolroom.

fingered maid can or will clean out? My milk-jug must be, not cheap, but inexpensive; it must not deluge my table-cloth, and must not need a special servant to look after it; otherwise my purse and wife will not consent to its introduction into the household."

Avoid being insistent upon any special method, and above all avoid strong criticisms of results. It takes years of study to draw and express with ease, freedom, and fine effect in any medium. It is better to praise excellent work than to comment upon failure.

"Life is too short to waste
In critic peep or cynic bark,
Quarrel or reprimand: —
"'Twill soon be dark;
Up! mind thine own aim and
God speed the mark!"

— Ralph Waldo Emerson.

Suggestions for the Teacher. — Lead the pupils to study the example on the drawing-book page, and as many other good examples as possible. Copying the example on paper will possibly fix the rendering better than mere observation. Select objects simple in form and with reasonable contrasts of color, seeking especially for some strong, dark notes of color. Place the objects so that the light falls from but one window upon the object. This can be regulated by "shadow-boxes" made of thick paper, and so arranged as to cut off all light except that falling directly on the object. Avoid a light directly in front. Most school buildings are now arranged so that the light falls entire from the back or at one or the other side. If it falls from the back of the room it will be very hard to get effects in light and shade. Color (or light and dark) may be substituted for light and shade. Let the pupils sketch the object, studying the rendering in the drawing-books once more. After the study is well understood, let the pupils render it in the drawing-books.

Pupils' Work.

BOOK 8, PAGE 5. SIXTH YEAR BOOK, PAGE 21

REPRESENTATION.

NATURE. — Animal Studies. Form. Position. Action.
ART. — Choice of Aspect. Rendering.

[The pupil sketches animals in different positions, studies their general characteristics, and draws an animal in the book, with very little detail, studying the examples of rendering.]

Animal Study. — The practice of bringing into the schoolroom animals and birds makes the suggestion reasonable and practicable that such subjects shall be obtained for drawing lessons. Many pupils have pets, from the familiar dog and cat, to the rabbit and squirrel. When possible, it would be well to have a nature-study lesson precede the drawing, not only to correlate the studies, but to utilize the subject while obtainable, and to derive as much benefit as possible through observation. Little creatures, like the rabbit and squirrel, move about a great deal; therefore they are better for quick-action studies, than for finished drawings.

The pupils may place upon the space on page 5 of the drawing-book, careful, yet quick sketches of parts of an animal. A number of these may be made, the pupil returning to a former sketch occasionally to add further touches when the animal resumes a previous position. As a preparation for the lesson it would be well to talk with the pupils of the value of suggestive sketches, of the practice of artists of making numberless quick fragmentary sketches, sometimes as preliminary to the composition of an important picture, and sometimes merely as practice or for notes of reference in time of need.

The sketches by John La Farge in the drawing-book and on Plate XIII. show very little finish and yet are so suggestive of the life and characteristics of the animal. The Japanese horses in the landscape, by Hiroshige (Book 8, page 2; Sixth Year Book, page 18), are interesting. Pupils should see the value of having every line *tell*, that they may not fuss over their work nor add meaningless details. Speak of some of the well-known animals, as the horse, the dog and cat, their intelligence and companionship, their characteristic form and action.

The cat is always an interesting subject for a sketch, and the space upon the page may be filled with action studies of a cat in different positions. A small terrier or a pug dog is also a good subject. Tact must be used to keep the animal from

Sketches. — John La Farge.

being too much excited by unusual surroundings; for that reason it is desirable to have the owner present and perhaps in close attendance.

An illustrator and a close student of the cat says: —

"The cat seems to have a knowledge of decorative effect. I have watched successive generations of cats inhabiting the gardens of old houses. They seemed to consider the low wall or the pillars of the gateway especially made to display their fantastic dignity. When cats change their attitudes their movements are always graceful. Sudden changes in dogs are usually brought about by movements as ungainly as those of Dr. Johnson, but a cat has an inalienable quality of beauty. Even when a mistaken sense of dignity leads a cat to the verge of being ridiculous, it somehow always manages to escape being contemptible by its decorative instinct.

"The nervousness and restlessness of cats make it sometimes difficult to obtain characteristic sketches of them. After sitting in a beautiful attitude for some time there will suddenly be a collapse into a mass of fur of impossible limpness. The most successful results in the way of sketches have occasionally been obtained where the cat turned his back on the tiresome proceeding, the long flowing lines with the splendid tail giving a characteristic effect of grace and beauty."

In speaking of the work and methods of an English animal painter, a competent critic says: —

"We have in England no one who can compare with J. M. Swan as an exponent of what is correct and appropriate in the representation of animal types and characteristics. His work in the Zoölogical Gardens has been from the first a searching for something more than mere attitude. He concerns himself about the individual character and personal peculiarities of the beasts, every pose that he renders, every action that he represents, has a meaning of its own. He combines a scientific power of observation with artistic skill of a very high order. He has, too, the rarest of gifts, *an exact judgment of the right moment to stop*. Nothing that he does is ever carried farther than is necessary to make its meaning clear, and no elaboration for its own sake ever spoils the significance and simplicity of his work. He uses habitually the very smallest number of touches that will express his meaning; but as every one must fulfill its exact function, nothing that he puts upon paper or canvas is in the smallest degree tentative or undecided. Therefore his use of line is very sensitive. By very subtle modulations and variations in direction he will make a single line suggest not only bone and muscle, but something also of the modeling of the furry coat."

A suggestive drawing or painting appeals so much to us because it leaves something to the imagination. The Greeks understood this, and while they were masters of line and form they never over-elaborated detail. Observe the quality of suggestiveness in the fragment of the Parthenon frieze in the drawing-book page; while the horses are

restless and prancing, what majesty and dignity there is in their carriage! Assyrian sculpture made much of animals, especially as seen in the chase. A very fine collection of these sculptured animals showing the Assyrian method of treatment can be seen at the Peabody Museum, Cambridge. They belong to Harvard College. Upon these slabs are sculptured in low relief battle scenes in which horses are shown in violent action. The king evidently rode out to conquer and returned in triumph. Some of the most interesting of these sculptures are those pertaining to the chase, mares are running with their colts, wild asses are pursued by dogs; the king rides forth with his retinue and kills the lion with his arrow. In all these scenes the life and action are truly wonderful.

Painters have become noted for their successful treatment of cattle, sheep, and animals of various kinds. Landseer painted the deer in his native glen and was especially fond of representing all kinds of dogs. Rosa Bonheur's power as an animal painter is well known. Troyon made masterly studies of animals. In this country there are able painters and sculptors who use animals as subjects for their work. The sculptured animals used as decorative motives on the buildings at the World's Fair at Chicago were very striking, such as the bear, the moose, the antelope, the jaguar, the elk, and the buffalo. Edward Kemeys and A. P. Proctor did much of this sculpture of animals native to America.

Two sitting lions by Louis St. Gaudens are at the sides of the staircase of the interior of the Boston Public Library. They hold the position of quiet but alert sentinels, and while of great interest in themselves, are treated in such a grand and simple way as to seem a part of the decorative scheme which, including the stately stairway and the wall decorations by Puvis de Chavannes, forms a most harmonious whole.

Proportion and Relation. — If a dog's head seems a happy selection for the space, then let the children decide how large it should be upon the page, and make several light marks to signify the approximate boundaries. The head should also be lightly blocked, and the proportion and relation of each part to the other should be carefully considered, as good drawing and placing are quite as important as artistic effect. If considerable color is shown in black and white with the pencil, then it would be well to place a piece of paper over the completed sketch to prevent soiling the opposite page.

Bony Structure and Muscular Development. — In all animal study, as in study from the human figure, the fact of the underlying bony structure should be well borne in mind, as well as the muscular development. The pupils should

study the general effect of the animal as a whole, look for the long lines, the leading characteristics and peculiarities shown in the contour, and feel the strength under the curve. A lack of such study will result in forms apparently stuffed with sawdust. In order to help the pupils to feel these individual characteristics of different animals it may be well to speak of the dog as sinewy and muscular, with powerful haunches, the body slender at the back for speed and strength, — the alertness of the rabbit and the reason for the strong hips, — the grace and repose of the cat. The difference is marked sometimes between animals of the same kind, as the greyhound and the terrier, the pug and the setter. The legs of animals are very different and are admirably adapted to their purpose, as in the horse, the dog, the pig, and the cat. The curves of the pig are very decided, the muscles are so lost in fat.

Sources of Information. — Much can be learned of the habits of animals in literature. Much that Darwin has written in this direction would be of great interest and profit to the pupils. Animals have always been a prominent feature in story and fable. Kipling's Jungle Tales are full of fanciful interpretations of animal life. The wild beasts live and talk after the manner of human beings though still true to their wild life. Kipling speaks of monkeys as being so intensely interested in what they are doing and yet the next minute seeming to forget what they have done. This seems a fine touch, as monkeys are in so many ways like man and yet lacking in judgment and continuity of purpose. The life of Mowgli with his friends the wolves, and his various adventures, the wonderful word-pictures of a forest in India, are of interest to every one and give much food for the imagination.

> "The wolf cub at even lay hid in the corn
> When the smoke of the cooking hung gray;
> He knew where the doe made a couch for her fawn,
> And he looked to his strength for his prey.
> But the moon swept the smoke-wreaths away,
> And he turned from his meal in the villager's close,
> And he bayed to the moon as she rose."
>
> — Rudyard Kipling.

Home Work. — Encourage work out of school. If the pupils can make sketches from horses, cows, or such animals (subjects impossible to study in the schoolroom), let them bring such sketches; have them pinned against the blackboard, and discuss them informally and impersonally, the teacher and pupils offering helpful suggestions. This is the Art School method, and is always valuable. The pupils may collect good pictures of animals and study them.

BOOK 8, PAGE 6. SIXTH YEAR BOOK, PAGE 22.

DECORATION.

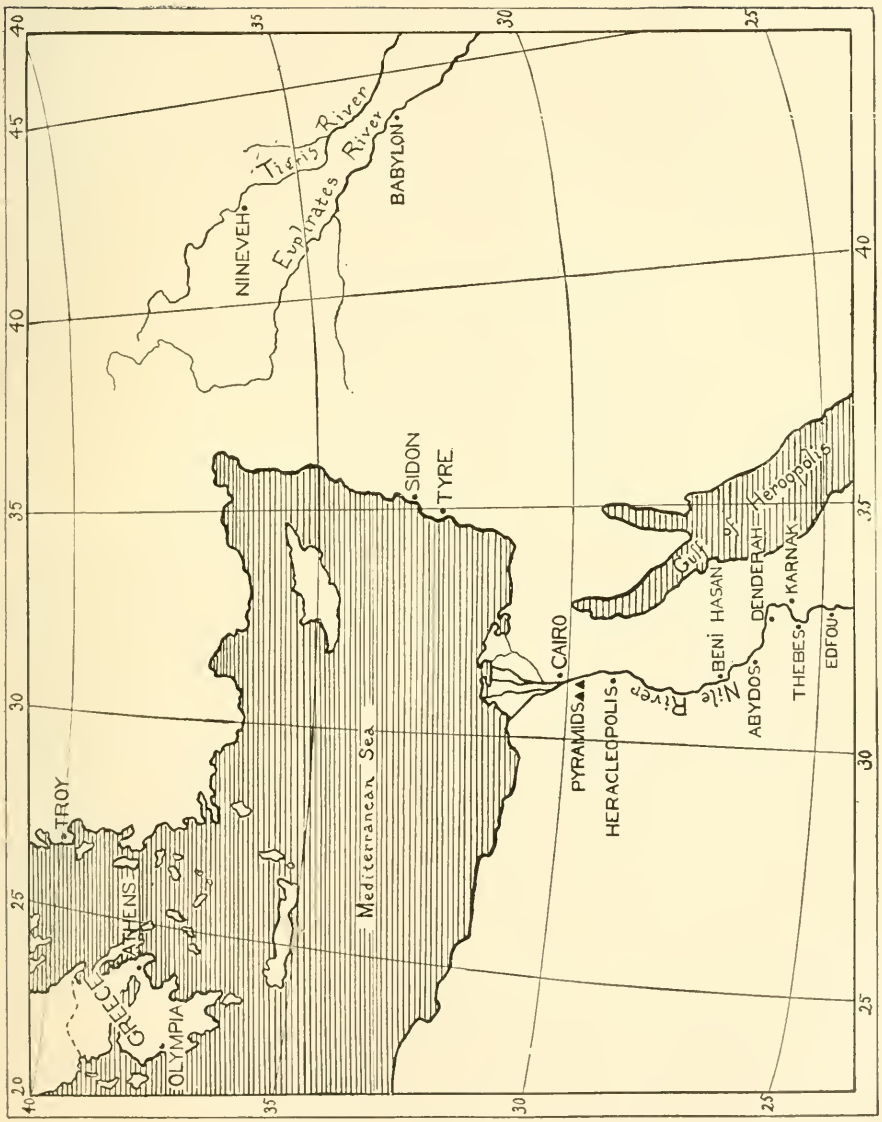
EXAMPLES. — Historic Ornament. Greek. Space Relations.
ART. — Rendering. Expression of Color.

[The pupil studies the examples on the drawing-book page, observing the use of ornament, plans for the enlargement of an example, and reproduces it enlarged in the book, or designs and draws another vase or pitcher on the drawing-book page, seeking for beauty of line and of space relations, and showing color by brush and ink, if desired, or by water-color or by colored paper.]

Historic Ornament. — The primitive needs of man are for food, shelter, and clothing; the desire for beauty follows close upon these. From the earliest times and among all sorts and conditions of people, the love of beauty has always found some means of expression. It is found embodied in the forms and decorations of pottery, in the colors and patterns of woven stuffs, above all, in architecture, sculpture, and painting. Different peoples and different ages have expressed in very different ways the desire for beauty common to them all, but, as one studies the work they have left behind, it is found that, starting from widely different standpoints, they often reached the same elementary principles of beauty, — certain principles which seem to underlie all beauty. So, when studying either to appreciate better the beauty in the art work of others, or to express better our own inward conceptions of beauty, it is a great help to see how the people of old times felt about such things, and in how many different ways they embodied their own beautiful ideals. This is the main purpose of studying Historic Ornament.

Greece. — The two countries, Egypt and Greece, are so extremely different, that they become very interesting by comparison. Egypt on the map covers quite an extent of country, but Egypt itself is really only the country along the Nile. Egypt then means virtually the long strip of country which embraces the banks of the Nile, and is fertilized by the annual inundation of that river. The climate is mild; it is said there are but two seasons in Egypt, spring and summer. Thus Egypt is but little diversified in physical conformation; the slight changes in season are at long intervals, and hence the rhythm of national life is made up of slow alternations. All Egyptian art tells of calm restraint and endurance, from the attitude of the images of her gods, to her temples and pyramids that have stood sixty centuries.

The country of Greece presents wholly different conditions. Almost a peninsula itself, it is made up of peninsulas. Look at the map, and you will see how the coast



Map showing the Relation of Greece and Egypt.

is broken all along its line. The sea, restless, joyous, powerful and grand, ebbs and flows sinuously along the shores, or dashes in and out, penetrating far into the clefts and fiords. All is life and motion. Greece has mountains too; Mount Olympus and Mount Parnassus are but parts of chains and ranges that stretch through the land and that make green valleys. The sun shines brilliantly over all; the trees and flowers and fruit grow marvellously. It is a very beautiful country, full of variety and charm. Its climate ranges from intense cold in winter to fierce heat in summer, partaking of the temperature of the north and south.

"Fair clime! where every season smiles
Benignant o'er those blessed isles,
Which, seen from far Colonna's height,
Make glad the heart that hails the sight,
And lends to loneliness delight.
There, mildly dimpling, Ocean's cheek
Reflects the tints of many a peak
Caught by the laughing tides that lave
These Edens of the Eastern wave."

— Lord Byron.

Its People. — The richness and variety and beauty of the country are found reflected in the nation. The people climbed mountains and labored diligently at the oar, thus gaining physical strength, while the genial air added to their vigor. Daily gymnastic exercises, bathing, and athletic sports promoted that beauty and fine proportion of the figure for which the Greeks are noted, and which are shown to us in their sculpture.

Their surroundings influenced also their moral character. The mountains rose as barriers between towns and so fostered the spirit of independence. The sea stimulated their curiosity. The soil was easily tilled, but required sufficient labor to give the blessings of toil. The climate was soft and agreeable, and led to pleasure-loving, but was not enervating. They were brave and athletic; their Olympian games were the greatest the world has ever seen. But fine as was their bodily culture, they were supreme in intellect. The Greek language is rare and complete in structure, and Greek literature is unsurpassed.

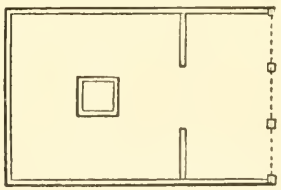
The myths and stories of Greek life are of great interest, and show how the thought of the nation arose and developed. And along with their intellectual culture stands their wonderful art. Their theatres and temples are still the admiration of the world, and their sculpture has never been equaled. The prayer of the Greeks, expressed by one of their philosophers, was, "Give me beauty in the inward soul; and may the outward and inward man be at one."

"As a whole, the people of Hellas surpassed all nations, ancient and modern, in one quality. This is the love and perception of a mean or measure in all things. In physical growth, intellectual pursuits, and moral conduct they seemed to move by a certain rhythm. The sense of measure marks their philosophy, their poetry, and their art, and there can be no doubt that the more of measure that we discover in their religion, their thought, and their private life, the nearer we shall be to understanding them." — PERCY GARDNER.

How they Lived. — The life of the Greeks was in the main quite simple, the people of Athens and Sparta especially being abstemious. Fish, vegetables and fruit formed a large part of their diet. Homer tells us of the continuous fruitfulness of the country.

"Without the palace court and near the gate,
A spacious garden of four acres lay.
A hedge enclosed it round, and lofty trees
Flourished in generous growth within, — the pear
And the pomegranate, and the apple tree
With its fair fruitage, and the luscious fig,
And olive always green. The fruit they bear
Falls not, nor ever fails in winter time
Nor summer, but is yielded all the year.
The ever blowing west wind causes some
To swell, and some to ripen; pear succeeds
To pear; to apple, apple, grape to grape,
Fig ripens after fig."

Their houses were very simple, as they were occupied but little of the time, the people living largely out of doors. The ground floor frequently had no windows, and the exterior of the houses was quite plain. A plan is given here which the historian Curtius accepts as probably representing the early Greek house. The portico, which may be seen in the plan, was thought by them quite indispensable. Beyond the portico there was one square room with the hearth-stone for fire in the centre. Later the house became more complex, consisting of a number of rooms about an open court. At first the roof was flat, but later was raised to slant each way, as shown in the pediments of the Parthenon and the temple of Theseus on page 16 of the drawing-book (Seventh Year Book, page 32).



The men congregated at the gymnastic and athletic exercises, at the baths, at the market-places, at the public games, and at religious ceremonies. The women

remained at home much of the time directing domestic occupations, but they attended the Eleusinian celebrations and took part in the Panathenaic procession. The handicrafts were carried on by the slaves, although their work was frequently directed by men from the upper classes.

The Greek costume was also of a simple character, with not a great deal of difference between the dress of the men and that of the women. The principal Greek dresses were the *chiton*, the *himation*, and the *chlamys*. The most of Greek dresses consisted of a square or oblong piece of cloth, made up by folding, with or without sewing, into a suitable shape. A Greek costume is easily improvised. The following directions are given by Percy Gardner in a Manual of Greek Antiquities.

"A piece of square or oblong cloth or linen was taken (Fig. 1, *lmon*), and doubled over at the line *ab* when it would present the form *abon*, where the portion *am* is double. This was again doubled at the line *cd* and folded backwards so as to leave the flap *lmc* visible (Fig. 2). The person putting it on would now stand inside it at *efhg* (Fig. 3) and fix with buckles or clasps the front and back portions together over each shoulder at *e* and *f*. She would then let the corners *ab*, and *c* fall and the whole chiton would be disposed about her. The flap over at the upper part of the body

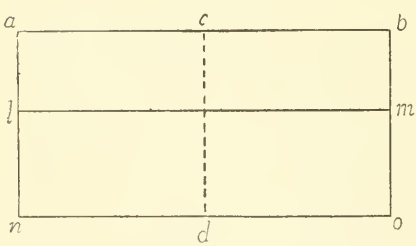


Fig. 1.

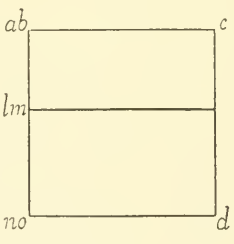


Fig. 2.

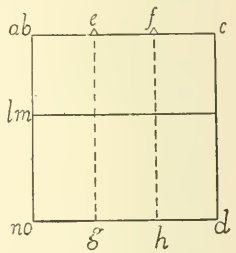


Fig. 3.

was called the *diplois*. The left side of the body *cd* was thus properly shielded, and the right side *abno* was comparatively unprotected, the chiton being only fastened at the shoulders and being open from the shoulder to the ground. For a remedy to this defect a girdle was used, being fastened around the loins of the wearer; under the girdle the dress could easily be drawn so as to overlap and to hide the want of continuity. Moreover, as the chiton was generally long, it would trail on the ground unless raised by means of the girdle, when the superfluous length would fall over the girdle in the form of a fold. Some-

times the open side of the chiton was sewed up, as is the case with the Canephoræ of the Erechtheum, and sometimes in addition to the one fastening at the shoulder others were added on the upper arm.

"The himation was worn in much the same way by both sexes, by women as the upper, by men frequently as the sole garment. It consisted of a large, nearly square piece of cloth, doubled over (*abcd*, Fig. 4), at the line *lm* so as to be oblong (*lmcd*, Fig. 5). This was then taken up and the point *x* placed on the left shoulder, when the remainder *zl* was gathered together and thrown over the back. It was not fastened at all, but held together by its own weight and by the arms.

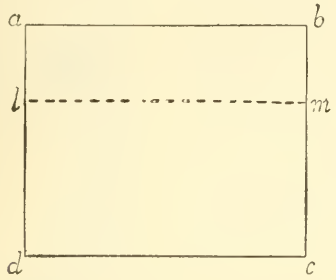


Fig. 4.

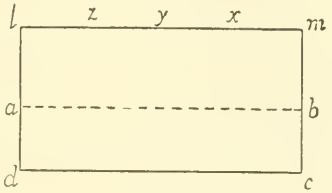


Fig. 5.

"Women commonly drew the himation over instead of under the right shoulder and turned up the outer fold over the head and shoulders to form an ample veil."

"The chlamys, which was originally a riding and war cloak of the Thessalians and other northern races, was early introduced into Greece and almost entirely superseded the himation as a cloak for young men and for men on active business.

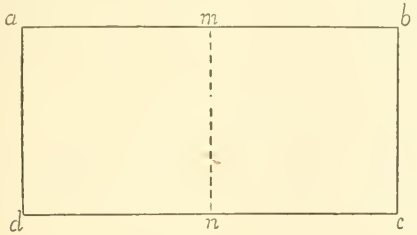


Fig. 6.

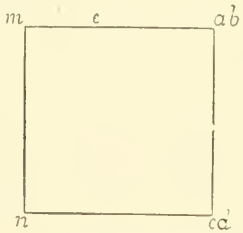


Fig. 7.

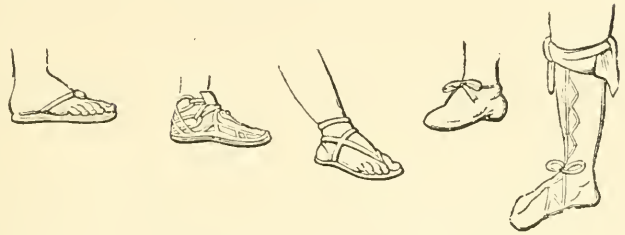
"The mode of wearing the chlamys was very simple. It was of oblong shape and doubled until nearly square, as in the engraving; *nm* thus becomes the closed side, and *ab cd* the open one. The wearer, standing with his back to the reader, puts his head through at *me*, and fastens the chlamys at *e*, with a buckle at the right shoulder. The ends would

hang down or flap in the wind. In this way the left arm, which was in riding naturally used only to hold the reins, would be entirely covered, but the right quite free to hold whip or lance; the points *cd* would hang down and nearly touch the ground."

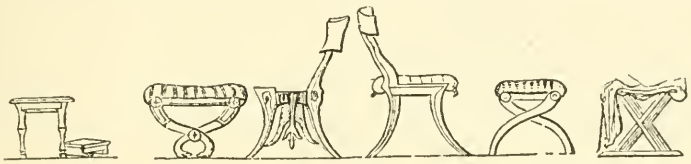
The illustrations of Greek sculpture above show how the Greek dress was worn. The exquisite sculpture from a Greek tomb, on page 16 (Sixth Year Book, page 32), also shows the lines of the drapery. The statues of Sophocles and of Pudicitia (Modesty) show how the himation was worn by men and women respectively. The Tanagra figurine, page 188, shows another use of the himation. The chlamys may be seen as worn by one of the riders in the Parthenon frieze, illustrated on page 194.

The head gear and the foot wear were as simple as the garments. Among the head coverings, *a*, *b*, and *d* are called *pilos*; *g* and *h* are Phrygian caps, and *e*, *f*, and *i* are called *petasos*, the winged petasos *e* indicating the god Hermes. Frequently neither head nor foot covering was worn. Sometimes only soles were worn

on the feet, as shown in the left half of the illustration, while on the right half simple shoes are seen. All these illustrations are taken from statues.



The furniture was also quite simple ; there were folding-stools quite like the camp-stools of to-day, as the chairs were similar to chairs of the present time.



The Greeks laid great stress on education ; it took up minor matters (as, for instance, which way to wrap the himation), as well as moral training. The four essentials were grammar, gymnastics, music, and drawing. One writer has said, "They regarded education as a training for right living rather than for correct thinking."

Of Greek art, John La Farge says in his "Artist's Letters from Japan" : —

"That is to say, that they too often do not look to the end, but to the means, while to the artist the means are a mere path, — as with the Greeks, whose work will live, even if its very physical existence is obliterated, because it is built in the mind, in the eternity of thought. So Greek art existed, and has lived, and lives, the most flourishing and richest that we know of, — with less to represent it than we turn out daily. So it lived, when it had no longer anything of its own body to represent it, in everything that was done in every country which kept its lessons ; and still lives, without examples to refer to, even in the very painting of to-day."

Greek Temples. — The architecture of the Greeks is the finest of antiquity, exquisite in form and proportion, simple, and harmonious. The most beautiful example was the Parthenon, now in ruins, situated on the Acropolis at Athens. The citadel of a Greek city was called an acropolis. It was usually the site of the original settlement, and situated on an eminence. When the city spread beyond

its early limits, the acropolis was generally cleared, and held sacred to the divinities of the people and their temples.

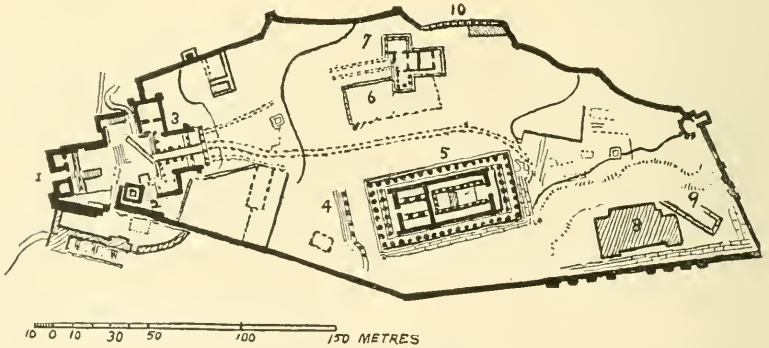
The Acropolis of Athens is a high rock, rising about one hundred and fifty feet quite abruptly, having a flat, oblong summit about five hundred feet wide and one thousand feet long, which could be approached on but one side, through the Propylæa, or gateway. The Propylæa included the gate itself and vestibules before and behind.

Plan of the Acropolis. — The plan of the Acropolis, showing the position of the various buildings, is given below. This plan will aid in understanding the different buildings seen on Plate XIV.

The Acropolis, —

> "— whose bright brow bound with dawn,
> Is head and heart of Athens,"

was approached by a steep, broad flight of steps divided by a roadway, and leading to the Propylæa. Just without the Propylæa, at the right, stands the small, delicately



PLAN OF THE ACROPOLIS.

1. Gate known as that of Beulé;
2. Temple of Nike Apteros;
3. The Propylæa;
4. Terrace walls;
5. Parthenon;
6. Foundation of an old temple of Athene;
7. Erechtheion;
8. Museum of the Acropolis (modern);
9. Old unknown building;
10. Columns in the wall.

proportioned temple of Nike Apteros, the wingless victory. Beyond, on the height itself, stood the magnificent statute of Athene Promachos, fifty feet high, whose helmet and spear could be seen at sea. At the right stands the Parthenon, built in

The Acropolis, with Mount Lycabettus in the Distance.

the simple Doric style, the crowning glory of the Acropolis. This temple was completed 438 B.C. It was built of Pentelican marble, and stood on the highest part of the Acropolis, near its centre. It was shattered by the Turks in 1687, by an explosion of gunpowder. It was about two hundred and twenty-eight feet long, one hundred feet wide, and sixty feet high. It was surrounded by Doric columns, eight at each end, and seventeen at each side, counting the corner columns twice. It was the central point for the great festival to Athene, for it contained a wonderful statue of that goddess, made of gold and ivory. It was adorned with most beautiful sculptures and ornaments.

"Thus Wisdom, from the neighboring Parthenon
Down on the Areopagus, could fix
A watchful gaze: thus from the rising Pnyx
The Orator's inspiring voice could reach
Half o'er the City, and his solemn speech
Was as a father's counsel to his son."

— RICHARD MONCKTON MILNES.

By referring to the plan of the Acropolis, page 192, it will be seen that one standing just inside the Propylæa, and looking toward the Parthenon, would see both the end and side. Its place on the Acropolis seems to have been purposely so chosen that the first view obtained after entering the Propylæa would be one showing its full beauty.

The body of the Greek temple was called the cella. The cella was surrounded by columns (as seen in the illustration of the temple of Theseus), which formed the peristyle. The cella of the Parthenon was ornamented with a series of magnificent sculptures in low relief, running around the upper part of the wall, which is known as the Parthenon frieze. This frieze was three feet, four inches high, and five hundred and twenty feet in total length. This series of sculptures is supposed to illustrate the great Panathenaic processions. Once in four years the Athenians made a grand procession from the town to the heights of the Acropolis in honor of Athene or Minerva, the goddess of art-wisdom. A beautiful robe, embroidered by maidens of noble birth, as well as other offerings, were borne to Athene in this procession. The robe was displayed to the people as the sail of a ship which ran on rollers, and carried priests and priestesses who went to participate in the festival. Citizens bore branches of olives; freedmen and barbarians bore branches of oak. Oxen were led to be sacrificed. Men bearing baskets, women bearing jars, joined the throng. Chariots and horsemen, young men and maidens, priests and magistrates and old men, joined in the procession.

The frieze of the Parthenon presents a wonderful scene. At its beginning are twelve gods seated; a procession appears from each side, moving toward the gods The whole frieze is beautiful in movement and beautiful in repose. It is in most delicate relief, the highest part of the relief being but little more than two inches.

Characteristic fragments of the frieze are illustrated here, — horses and their riders, and bearers of wine. The spirited horses of the Parthenon frieze have never been equaled in sculpture. The bearers of wine show more quiet action: the drapery, the beautiful form of the vases, the marvellous composition of line, — great

variety, no two forms being just the same, yet beautiful harmony, — all contribute to the beauty of the whole.

A large number of fragments of the frieze, amounting in all to about two hundred and fifty feet in length, were obtained by Lord Elgin in 1816, and transported to England. They were finally purchased by the nation for thirty-six thousand pounds, and are now in the British Museum.

Ictinus was the architect of the Parthenon; to Pheidias, the greatest sculptor

the world has ever seen, was due the surpassing beauty of the sculptures and ornament. Fergusson says that, "for intellectual beauty, for perfection of proportion, for beauty of detail, and for the exquisite perception of the highest and most recondite principles of art ever applied to architecture, it stands utterly and entirely alone and unrivaled."

The characteristics of a people are surely manifested in their art.

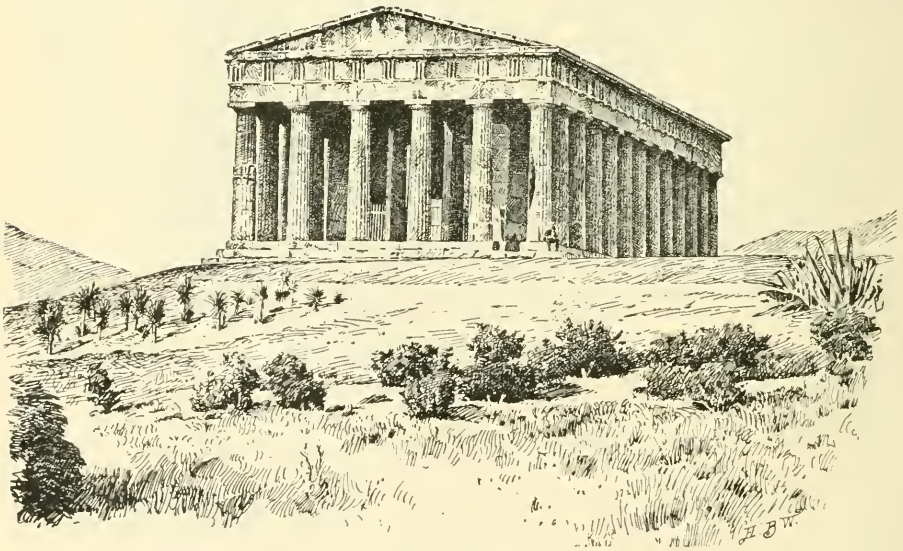
"Scarcely any of the moral power of Greece depended upon her admiration of beauty or strength in the body. The power of Greece depended upon practice in military exercise, involving continual and severe ascetic discipline of the senses; on a perfect code of military heroism and patriotic honor; on the desire to live by the laws of an admittedly divine justice, and on the vivid conception of the presence of spiritual beings.

"The laws of self restraint of Greek art are very marvellous. Its peace of heart and contentment in doing a simple thing, with only one or two qualities restrictedly desired and sufficiently attained, are a most wholsome education." — JOHN RUSKIN.

On the north side of the Acropolis stood the Erechtheion, an Ionic temple of irregular form and of great beauty. By referring to the plan of the Acropolis, page

192, the plan and location of the Erechtheion will be seen. Two illustrations of this temple are given on Plate XV. The front portico had six columns. The south portico is known as the Caryatid porch, because it is supported by the figures of six maidens called Caryatids. The illustration shows very plainly the restorations that have been made. Surmounting this porch, there remains a fragment of the beautiful moulding illustrated on page 208.

In the Erechtheion was preserved a wooden block which was really, to the Athenians, the most holy image of Athene, fabled to have fallen from heaven. The oldest and often the most sacred statues of the Greeks were rude idols of wood. Here was the wonderful olive tree which, according to the legend, was produced by the goddess, at the time of the contest for the soil, as a specimen of her power, and which sent forth a fresh shoot two cubits long in one day after it had been burned down by the Persians. Here, also, was the snake sacred to Athene, to which a honey cake was carried by the priests every month. Here was the golden lamp made by Kallimachos, the Art Refiner, that was filled but once a year, and kept perpetually burning. A bronze palm tree, placed over the lamp, and reaching to the roof, carried off the smoke.



TEMPLE OF THESEUS.

The temple of Theseus, the Theseion, shows the form of the Greek temple more perfectly than the Parthenon, as it is in a less ruined condition. This

temple is situated on a small hill at the north of the Acropolis. It was built about 465 B.C., and is the best preserved of all the Greek temples. The illustration shows plainly the simple Doric columns, the triglyphs, the metopes, and the pediment. The columns are fluted; the entablature, the broad mass resting on the columns, is divided horizontally into architrave, frieze, and cornice. The architrave is the plain face seen in the illustration. The frieze is divided into triglyphs and metopes, the triglyphs being tablets with three channels, and the metopes being the spaces between the triglyphs. The cornice is above the frieze, and the pediment is the triangular space enclosing the end of the roof and crowning the front. The metopes and pediments were ornamented with sculptured figures. The temple of Theseus is only about half as large as the Parthenon, being one hundred and four feet long by forty-five feet wide.

The beautiful order seen in all Greek architecture and ornament is visible here, the triglyphs and metopes being placed according to the columns. Greek temples are beautiful, not only in simplicity, proportion, and harmony, but also in variety of light and shade, caused by the arrangement of mouldings, cornices, and columns.

The Greeks studied proportion most closely and carefully. Investigation by Mr. Penrose and others shows that there was a scale of proportions advancing toward equality carried out in a temple. These proportions concerned such relations as length to width, width to height, solid to open space, width of a column to the distance between the columns. All these were in harmonic relations, differing only by the approach to equality. Harmony between the parts was attained through the use of a **module** — a unit of measure — which governed all the dimensions and proportions of a building.

To overcome the effects of contrast and optical illusion, the long horizontal lines were slightly curved, and the columns were given a slight swelling or *entasis* in the middle. These modifications were so subtile that for a long time they were not discovered, and the secret of the repose and harmony of the whole was unrecognized.

Plutarch says concerning the Greek temples:[1] —

"For every one of those that were finished up at that time, seemed then to be very ancient touching the beauty thereof; and yet for the grace and continuance of the same it looketh at this day as if it were but newly done and finished, there is such a certain kind of flourishing freshness in it, which letteth that the injury of time cannot impair the sight thereof: as if every of those foresaid works had some living spirit in it, to make it seem young and fresh, and a soul that lived ever which kept them in their good continuing state."

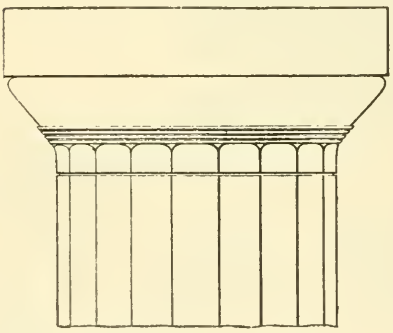
[1] Translated by Sir Thomas North.

And it has proved true that the architecture of the Greeks is living, that its harmony and restraint have continued to control and influence life down through the ages, and that its "beauty goes forth to light the world forever."

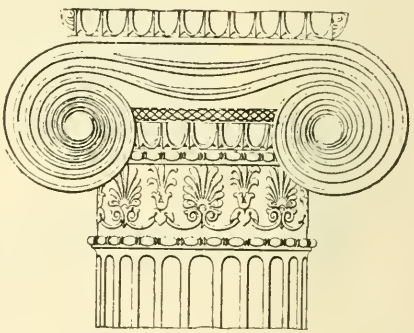
Choragic Monuments. — There were in Athens many interesting monuments; among them were those known as choragic monuments. In Athens theatric representations had the character of a national and religious institution. The chorus played a large part in these representations. Prizes were offered to stimulate the work of the chorus. A bronze tripod was given to the choregos, whose chorus exceeded the others in their representation. The victorious choregos erected a monument on which to place the tripod, and a whole street, called the Street of Tripods, was lined with these emblems.

The most celebrated choragic monument is that of Lysicrates, which dates from 335–334 B.C. It is illustrated on the opposite page. Its whole height was only thirty-four feet. It is one of the earliest authentic examples of the Corinthian order. An illustration of the capital of the columns will be found on page 201. A front view of the monument and of half the acroterium which surmounts the monument, as well as an illustration of one of the scrolls on its roof, will be found on page 209.

Greek Orders. — There were in Greece three architectural orders, — the Doric, the Ionic, and the Corinthian. While the general typical structure in these



Doric Capital — Parthenon.



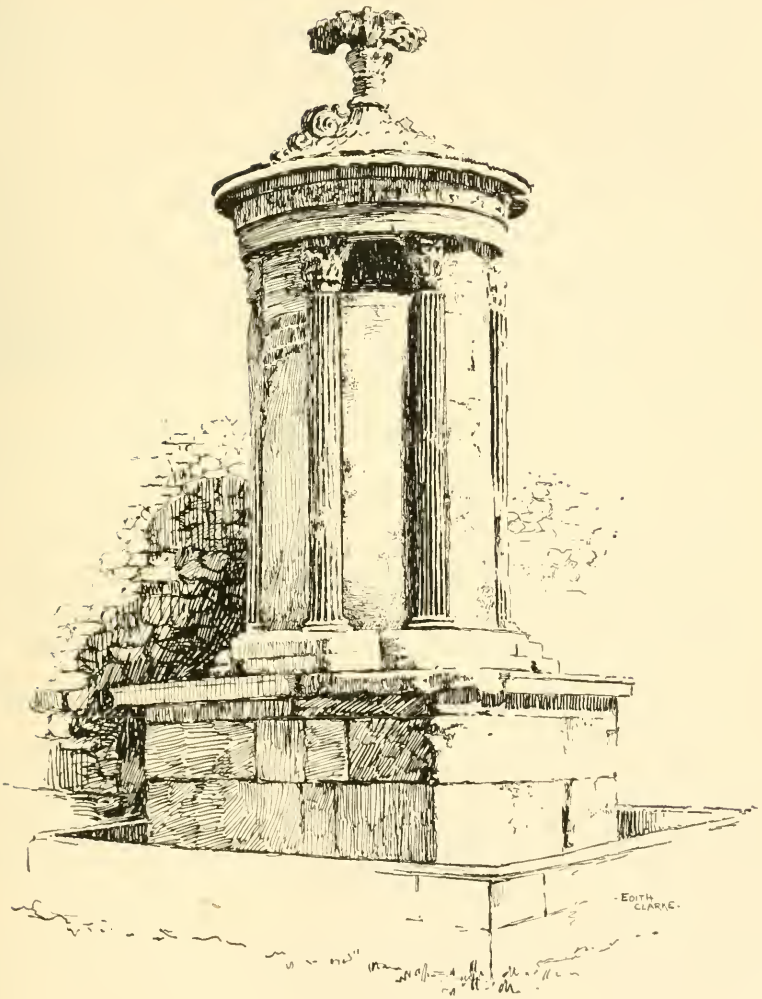
Ionic Capital — Erechtheion.

three orders is the same, yet the details peculiar to each are markedly different. Of all these details the columns are the most distinctly representative of the character of the order, for in the column the difference of style is most manifest.

The Doric columns are short, massive, closely ranged together, and have no

Temple of Erechtheus.

Porch of Caryatids, from the Temple of Erechtheus.



Monument of Lysicrates.

base. The shaft is fluted, having twenty channels; it tapers upward, being considerably smaller at the top than at the base, and, like the columns of the other orders, swells in a gentle curve in the middle, called the *entasis*.

The Ionic column is more slender, diminishes less rapidly than the Doric column, and rests upon a base having several mouldings. The Ionic column is fluted in twenty-four channels.

The Corinthian column is still more slender than the Ionic; like the Doric and Ionic columns, the shaft is fluted, and, like the Ionic column, it rests upon a base.

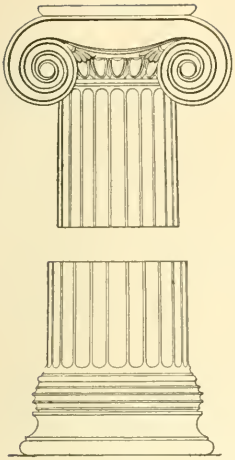
But while the columns of these different orders differ decidedly in proportion, they differ still more in their capitals. The Doric capital is simple in the extreme: it consists of a low, broad echinus, upon which the square block of the abacus rests. The Ionic capital is wholly different. The echinus of the Doric capital is replaced by a rounded moulding, generally the ovolo, or egg and dart moulding, and the abacus seems to have become elongated into a broad, cushion-like band, the ends of which roll spirally into volutes.

The Corinthian capital presents some wholly new elements. It generally retains the volutes; but they spring from below, and meet at the angles of the abacus. The acanthus leaf here appears, and is a constant characteristic of the Corinthian style. Between the capital and the shaft, there is usually an astragal, as seen in the capital from the temple of Apollo at Miletus, on page 201.

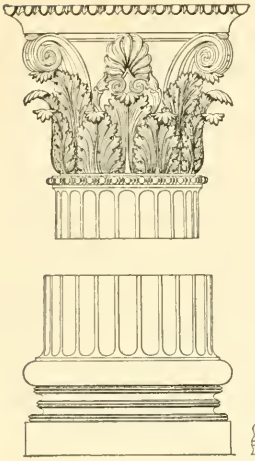
While each order had a very definite character, yet each was susceptible of great variety. Compare the simple Ionic capital from the temple of Nike Apteros, page 201, with the ornate capital from the Erechtheion, page 198. Each has all the distinguishing characteristics of the Ionic capital. Compare also the two Corinthian capitals. Each has the rich acanthus decoration and the four volutes below the abacus, yet they differ decidedly in general effect.

The characteristics of the two temples, the Parthenon and the Erechtheion, may be seen in the capitals of the two structures, illustrated on page 198. The Doric capital of the Parthenon has in itself breadth, simplicity, and majesty. The Ionic capital of the Erechtheion has more elegance, more variety, more ornamentation.

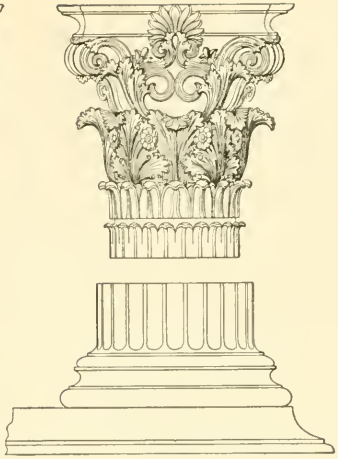
Vases. — The leading figure on Plate XVI., as well as on the drawing-book page, is that of a vase. The Athenian potters were the most skilled in Greece. They used a soft clay, of a pinkish color in its natural state, which, in baking, turned to an orange-gray, generally called red. This color was frequently intensified by artificial means. The name red, as used in the classification of Greek vases, is applied to the colors ranging from a yellow-orange to a red-orange gray. The vases



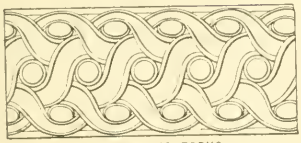
IONIC.
TEMPLE OF NIKE APTEROS.



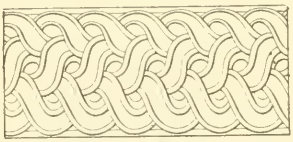
CORINTHIAN.
TEMPLE OF APOLLO AT MILETUS



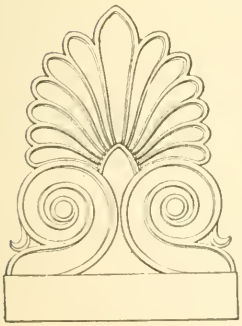
CORINTHIAN.
CHORAGIC MONUMENT OF LYSICRATES.



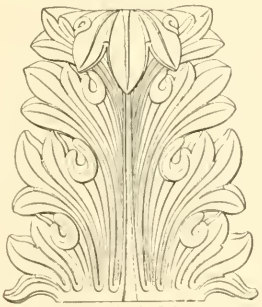
ORNAMENTED TORUS



FROM THE TEMPLE OF NEMESIS AT RHAMNUS



ANTEFIXE.
FROM THE PARTHENON AT ATHENS.



ACANTHUS LEAF
CAPITAL OF THE TOWER OF THE WINDS.

ANTEFIXE.
FROM THE TEMPLE OF ARTEMIS AT ELEUSIS.

Examples of Greek Capitals and Ornament.

were made upon a wheel, and, when the form was completed, were polished to remove the finger-marks in the clay.

The decoration was then added, varying in method according to the style of the vase, that is, whether black figured or red figured. The red- or light-figured work was done by drawing lightly the pattern in outline, and then painting in the background. In the black-figured patterns, the most of the work was done with one stroke of the brush. In either style the work bears marks of utmost freedom. Imagine the deep realization of the elements of beauty, as well as the trained hand, that Greek decorative artists must have had to be able to produce these beautiful results. Their work is not only free from the painful and barren hardness of mechanical accuracy, but is also imbued with that perfection of grace that comes only from a thorough feeling for the beauty to be expressed.

The Athenian potters learned to recognize the value of simplicity as an element of dignity. The number of their forms was not large; the ornamentation was restrained, leaving broad, plain spaces; and the colors were simply two, — black and red. Some of the forms were almost spheric; but in the general type the greatest width was a little above the middle, the body of the vase being ovoid.

In the black-figured vase, the figures and ornaments were painted; in the red-figured vase, the background only was painted black, leaving the figures and ornament of the color of the clay. The vase upon page 213, and the very beautiful vase in outline and in smaller size below on the drawing-book page (illustrated on Plate XVI.), are red-figured vases. Of the latter vase Lau says: —

"The high figure field corresponds to the form of the vase; the noble forms quietly standing there seem to have grown with the body of the vase. A most beautiful balance is obtained by their distribution at the right and left, while the lower part and the neck are intentionally kept subordinate. The lower part of the body rises directly, with flattened outline, from the simple rounded base; therefore the lower band is made, not of pointed but of uniformly broad leaves. In the same way the neck springs directly and sharply from the body.

"The horizontal handles allow the palmette ornament of the handle surface to be carried up and continued on the narrowing form of the vase. All is noble simplicity and most perfect harmony."

Jahn speaks of this vase as one of a collection of vases found in excavations on Etruscan grounds by Lucien Bonaparte, now in the Pinakothek at Munich.

The art of the Greeks is as conspicuously shown in their vases as in their sculpture, architecture, and ornament. Elegant in form and beautiful in decoration, they awaken the keenest pleasure in those who appreciate and enjoy the beautiful, and tell most truly of the wonderful civilization to which the Greeks attained.

Greek Vase, in the Pinakothek at Munich.

Pupils will be interested to know something of the uses for which the vases shown on the drawing-book page were originally intended. The large jar, shown in outline, and again just below with its decorative groups of figures, is an *amphora*, made to hold oil, wine, honey, or sometimes grain. The broad, shallow vessel at the left of the outlined jar is a *kylix*, used as a drinking cup or bowl. The vase with the trefoil-shaped top, shown at the right of the large, outlined amphora, is an *oinochoë*, or pitcher for serving wine. The small jug printed in black is an *aryballos* for oil. The other forms are variations of the *lekythos*, which was an oil or perfume jug, and was made very narrow at the throat that the liquid might escape only drop by drop.

A study of Greek vases in art museums will be of great value to those who wish to learn of Greek art. Seek at every stage to connect the work of the school with the masterpieces of the world; carry each exercise out beyond the everyday course of life; awaken, bring to consciousness, and stimulate the creative power of the pupil, by showing all that is possible of the great things of art.

THE VASE PAINTER.

Inspired the Athenian works!
With skilful brush and eager soul,
On these rare forms, he paints
The deeds of mortals and of gods,

With grace of line and draperied fold
That emulate the strong sweet curves
And subtile harmonies of part and whole
To which the vase itself gives birth.

With gentle emphasis, he marks
In scroll or fret or laurel leaf
The bands that separate or shrine
The story he has wrought.

And playing now, his fancy leads
His brush with firm, swift strokes
To homage pay in decorative guise
To body, neck, and handle of the vase,

Adorning them by scroll on scroll,
And radiating lobes of wondrous grace
In red on black or black on red,
And making glorious the clay.

Polychromatic Ornament. — It is more difficult to determine the range and nature of colors used by the Greeks than in the case of the Egyptians. Much of the coloring of the Greeks is found on fragments of marble that have long been exposed to the weather. It is considered quite certain, however, that Greek surface decoration was generally colored, and later discoveries seem to indicate that color was also used in sculpture.[1] Color seems to have been used upon the upper part of

[1] Mr. Edward Robinson, the curator of the Greek Department of the Museum of Fine Arts, Boston, and the author of the descriptive catalogue of the fine collection of casts in that Museum, has made a special presentation of casts of famous statues, colored according to the latest research.

a Greek temple more than on the lower. Imagine the Parthenon with harmonious coloring added to its beauty of form and proportion!

"The temple, low and broad and beautiful,
Serenely stands in all its wealth
Of column, frieze, entablature,

"With triglyph, metope, and pediment
Full sculptured, and discreetly crowned
With stately antefix of blue and red,

"And rich on fillet, band, and cornice
Bright color woos the sight
In ornament of purest curve,

"Echinus, bold and simply marked,
With astragal of beads and pearls
Of shining gold on ground of red,

"Guilloche of braids with jewels set,
And frets of interlacing bands
Of blue and red on golden field,

"Soft curving ovolo with egg of blue
Contour'd with gold, and dart incarnadine,
Harmonious on ground of green;

"And then with radiant, lightsome grace,
The anthemion border gayly broiders well
In blending hues the architrave,

"Now spreading wide, or in more slender form
Adorning now the mellow tone
Of marble rare, hewn from Pentelicus,

"Smooth gliding into involuting scrolls
Seductive, carrying on the eye and soul
In chords and melodies of color."

The colors used by the Greeks were few and used with much refinement; they were red, blue, green, brown, black, and gold. These, however, do not seem to have been crude reds, blues, and greens, but rather to have been so softened and inclined toward each other in hue as to produce, when combined, a most satisfying harmony. They used much less green than the Egyptians, and a great deal of red and orange-gray.

The Exercise. — A capital or a vase may be drawn on the drawing-book page. It will generally be better, however, to draw the outline vase. It is of very beautiful proportion and curvature. The effort to reproduce it affords fine æsthetic training. This has been very satisfactorily produced in colored paper — the red-grays and the orange-grays — with painted bands of black. Of course, any of the others can be reproduced if desired.

As a supplementary exercise, let the pupils study the vase forms on the drawing-book page as examples of beautiful proportion and fine curvature, and, with these to lead imagination in pleasant ways, design other vase forms of their own. Naturally, no two pupils will produce identical results. Encourage each one to express his own feeling, but try to keep the forms simple. On comparing an over-elaborated outline with outlines like those on the drawing-book page, the pupil will usually agree that the complicated and fantastic form would soon look common-

place and tiresome. Lead the thought also toward the material to be used and the adaptation of form to purpose. A vase intended for holding flowers must have a base of such proportions as to keep the whole in balance even when sprays or branches spread widely in one or another direction at the top. A vase intended simply as a thing of beauty in itself need provide only for the secure balance of its own weight. Encourage them to visit potteries that they may really see how vases are made and may understand better what shapes should be used.

Let the drawing of the vase contours be done in even gray lines without any expression of light and shade.

If desired, some preliminary experimental work might be done by paper cutting, — folding a bit of paper in two and cutting both sides of the vase at once. This often helps pupils to see the form *in mass*, and it is done so quickly that a great many experimental cuttings can be made in two or three minutes.

If time allows, or if additional time can be given by some pupils in the class, let bands of ornaments, suitable for the designed vases, be drawn on a separate sheet of paper. Pupils will enjoy completing their idea in this way. It will be better not to have the pattern inserted on the vase-drawing, as the modifications of such patterns through perspective present problems of too great difficulty to be successfully handled by boys and girls of this grade.

Books that may be Studied. — Some idea of Greek history is essential to an adequate appreciation of Greek ornament. Grote's "History of Greece" is fine, but voluminous. The titles of a few shorter books, giving a good general survey of Greek history, may be useful.

The Story of Greece. James A. Harrison. (From the series *The Story of the Nation.*)
Pericles and the Golden Age of Athens. Evelyn Abbott. (From the series *Heroes of the Nation.*)
The Age of Pericles. W. W. Lloyd.
Plutarch's Lives.
A History of Greek Art. F. B. Tarbell.
A History of Sculpture. Marquand and Frothingham.
The Home Life of the Ancient Greeks. H. Blümner.
A History of Architecture. A. D. F. Hamlin.

As an accompaniment to these, some books on mythology are mentioned : —

Manual of Mythology. Maxime Collignon.
Olympos : Tales of the Gods of Greece and Rome. Talfourd Ely.
The Gods of Olympos. A. H. Petiscus. With preface by Jane Harrison.
The Age of Fable. Thomas Bulfinch. Edited by Edward Everett Hale.

For further examples of Greek decorative art, the following list will be useful to those having access to art libraries : —

Grammar of Ornament. Owen Jones.
Die Grammatik der Ornament. E. Jacobsthal.
Polychromatic Ornament. A. Racinet.
History of Ancient Art. G. Perrot and C. Chipiez.
An Investigation of the Principles of Greek Architecture. F. C. Penrose.
Greek Polychromy L. Fenger and J. J. Hittorff.

A few books are here suggested for those who are interested in further study on Greek vases. They are all illustrated.

Catalogue of Greek, Etruscan, and Roman Vases. Edward Robinson.
Die Griechischen Vasen. Theodor Lau.
Greek Vases: their system of form and decoration. Selections from Lau.
Painted Greek Vases. James Millingen.
Greek Vase Painting. Jane Harrison.
Articles on Greek Vases. W. P. P. Longfellow. *Scribner's Magazine,* April and May, 1888.

Language. — This exercise presents remarkable opportunities for interesting the pupils, and inciting them to reading for themselves, thus obtaining material for written language exercises. Some of the books already given will be very much enjoyed by pupils. A few others, more especially adapted for younger readers, are added.

Three Greek Children. A. J. Church. With illustrations after Flaxman and the Antique.
Heroes and Kings. A. J. Church.
Stories from Herodotus. A. J. Church.
Herodotus for Boys and Girls. Edited by J. S. White.
Plutarch for Boys and Girls. Edited by J. S. White.
Family Flight over Egypt and Syria. Edward Everett Hale and Susan Hale.
Greek Heroes. Charles Kingsley.
Tanglewood Tales. Nathaniel Hawthorne.
A Wonder-book for Boys and Girls. Nathaniel Hawthorne.
Zigzag Journeys in Classic Lands. Hezekiah Butterworth.
Boy Travellers in the Levant. T. W. Knox.

BOOK 8, PAGE 7. SIXTH YEAR BOOK, PAGE 23.

DECORATION.

EXAMPLES. — Historic Ornament. Greek. Space Relations.
ART. — Rendering. Expression of Color.

[The pupil studies the examples on the drawing-book page, chooses one or more examples, plans for their enlargement, and reproduces them enlarged in the book, or after studying the examples, makes a design of his own, using Greek elements or elements of his own design, seeking for beauty of line and of space relations, and showing color by brush and ink, if desired, or by water-color or by colored paper.]

The Examples. — The illustrations on this page show a variety of Greek ornament. The two upper borders show the use of the rosette; the second of these borders shows Egyptian influence, as will be seen if compared with the Egyptian borders on page 151 and also in Book 7, page 10; Sixth Year Book, page 10.

The other border and the centre pieces show the use of the anthemion. See page 161. Notice how the characteristic proportional relation and the curvature are retained, although the proportion of the whole is changed to suit the need of the space to be filled.

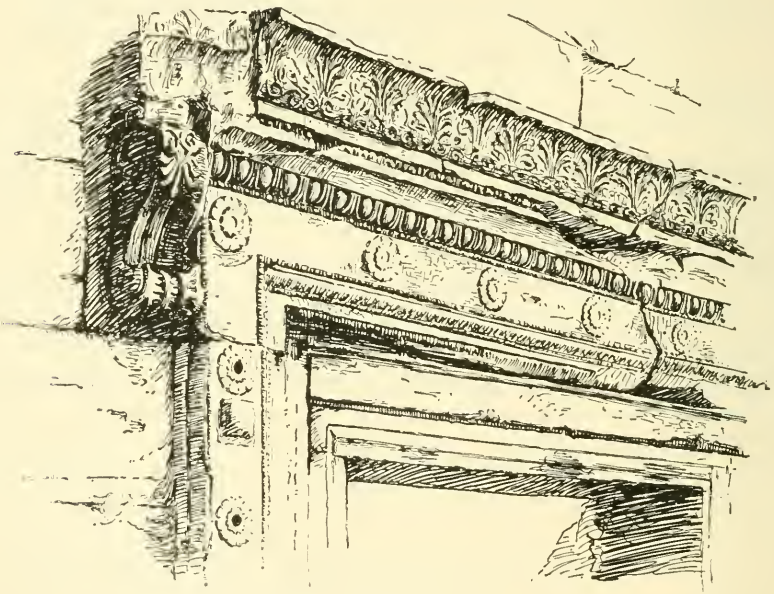
Character of Ornament. — The ornament of such a people was befitting its architecture. Of exquisite proportion and curvature, it showed intellectual beauty of the highest type.

It did not depend on symbolism, like Egyptian ornament, nor, like Gothic, upon direct inspiration from nature, as well as on symbolism; it seemed rather to present the ideal.

In the guilloches below the capitals on page 201, the flowing character of Greek curvature is shown. These are most beautiful studies of line. The two antefixes at the lower part of the same plate show that wonderful sense of proportional distribution which was so strong an element in Greek ornament.

The antefixes, with the acanthus leaf between them, are instinct with that life that comes from radiation. These three examples show also, to a greater or less degree, the use of the scroll. The scrolls in the Parthenon antefix manifestly tend to the Ionic volute, while the scroll in the antefix from the Eleusinian temple as manifestly tends to the continuous scroll which occurs on the roof of the monument of Lysicrates; see page 209. And the scroll tendency is again seen in the acanthus leaf from the Tower of the Winds.

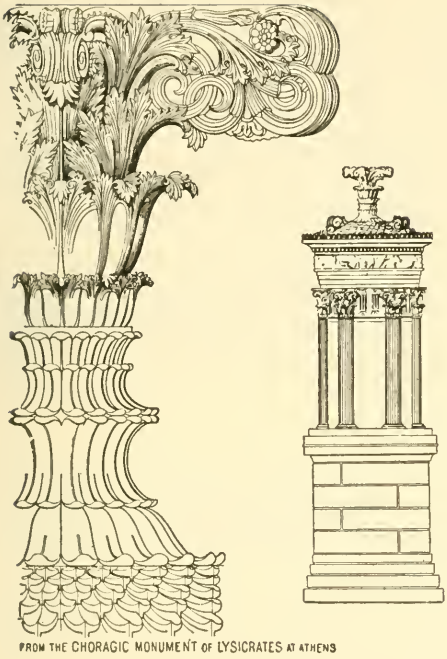
The Greeks did not use ornament as the Egyptians did, with a lavishness which somewhat approached savagery. There was always a restraint, a reserve. The Greeks knew the value of unornamented spaces. See how sparsely the rosettes are placed on the doorway of the Erechtheion, illustrated below. Yet there was no meagreness. The sparseness of the rosettes is counterbalanced by the full ovolo moulding above, with its accompanying astragal, and by the rich anthemion decoration crowning the whole. The harmony of Greek architecture lived again in the beauty and distribution of its ornament.



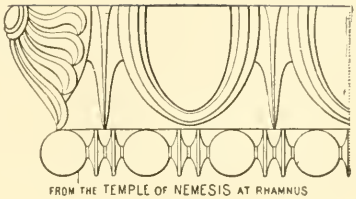
From the Erechtheion.

The character of the ornament of the Erechtheion can be seen further on the Ionic capital on page 201 and in the ornament on page 209. The sculptured ornament of the Greeks seems to have been slightly more elongated and more angular than their painted ornament, as will be seen by comparing pages 201 and 209 with page 213. In the sculptured ornament there is much openness and lightness, while the painted ornament seems to possess more fulness of curvature and of mass.

The mouldings used on the capitals and bases, friezes and cornices of build-



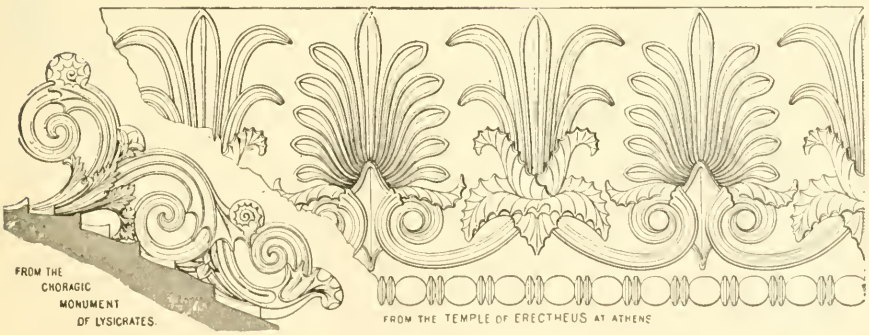
FROM THE CHORAGIC MONUMENT OF LYSICRATES AT ATHENS



FROM THE TEMPLE OF NEMESIS AT RHAMNUS

FROM ANTAE TEMPLE AT ELEUSIS

FROM THE TEMPLE OF NEMESIS AT RHAMNUS



FROM THE CHORAGIC MONUMENT OF LYSICRATES.

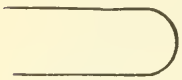
FROM THE TEMPLE OF ERECTHEUS AT ATHENS

Examples of Greek Ornament.

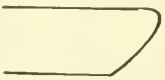
ings played an important part in Greek decoration; for the Greeks considered most carefully the effect of light and shade, as well as of form and decoration. The Greek mouldings are therefore a very interesting subject of study. Allusion can be made, however, to but a few.

There is a little apparent confusion in terms in Greek ornament. The various mouldings had their different names; and, as certain mouldings were generally decorated with certain ornaments especially suitable for them, the same name is sometimes applied indiscriminately to the moulding and to the ornament.

MOULDINGS.



ASTRAGAL.



ECHINUS.

OVOLO.

The **astragal** is a small moulding, semicircular in profile, used as a bead between other mouldings, or to mark the junction between the capital and shaft of a column. A larger moulding of the same form, used at the base of a column, is called a **torus**.

The **echinus** is a rounding moulding or cushion, on which the abacus of a Doric capital rests. Its profile is delicately convex, having a slightly swelling curve.

The **ovolo** is a moulding having a profile of reversed ovoid curves, from which it takes its name.

DECORATION.

ASTRAGAL.

GUILLOCHE.

ECHINUS OR OVOLO.

The place of the *astragal* moulding is sometimes filled by a bead or pearl ornament, which is like the astragal in profile. This bead or pearl ornament, sometimes sculptured and sometimes painted, is frequently called the *astragal.*

The *echinus* and *ovolo* mouldings are often decorated with the egg-and-dart ornament; hence this ornament is sometimes called the *echinus* and sometimes the *ovolo.*

The **guilloche** is an ornament of interlacing curved bands, like a braid. It occurs in the very simple form given above, as well as in more elaborate forms. See page 201.

Greek ornament shows us, however, the influence of previous civilizations. The chief forms of Greek ornament — the wave scroll, the fret, the guilloche, the ovolo, the astragal, the anthemion — had nearly all appeared in Egyptian work, and may be traced in cruder forms in the illustrations of Egyptian ornament.

The Greeks received Egyptian ornament, but they refined and transfigured it. Compare, for instance, the Egyptian and Greek treatment of the wave scroll. Figs. 1 and 2 are Egyptian; Figs. 3 and 4 are Greek.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

The Egyptian use of the scroll was generally rope-like, coil upon coil, while with the Greeks it was ever flowing, like the waves of the sea.

Egyptian ornament, though highly symbolic, was yet severe and constrained; much of their ornament is dominated by straight lines or sharp angles, and variation in proportion was not marked. Greek ornament, although not possessing the charm of symbolism, yet reaches a higher beauty than the Egyptian through subtility of proportion and curvature. This subtility of proportion existed not only in the parts of a figure, but also in spacing and distribution.

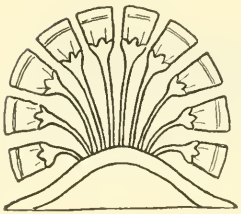
It is also interesting to see that Greek ornament very rarely combines, in one figure, straight and curved lines. See pages 201, 209, and 213. A Greek pattern may be made up entirely of straight lines, as in the fret, or entirely of curves, as in the anthemion. This is readily seen in page 213, which shows painted ornament only.

In Egyptian ornament the very sharp angle resulting from the lotus petals abounds, as seen above in Fig. 2, also in pages 151, 155; in Greek ornament such very sharp angles are rarely seen, and almost never in succession. In the ovolo, or egg-and-dart pattern as it is more familiarly called, the effect of the sharp angle

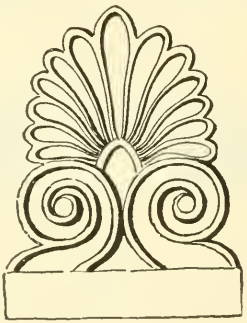
of the dart is softened by the oval curve of the egg. The angles that occur in the ornament of the Erechtheion are modified by the curved sides, or by the openness of the angles.

Radiation appears, and is considerably developed, in Egyptian ornament, as will be seen on page 155. The examples given below show how the comparatively crude radiation of Egyptian ornament was refined and sublimated by the Greeks. The anthemion is the subject of the exercise for Book 7, page 13; Sixth Year Book, page 13, and its development from the Egyptian is specially considered on pages 158–161.

Examples of Radiation.



Egyptian Lotus Arrangement.



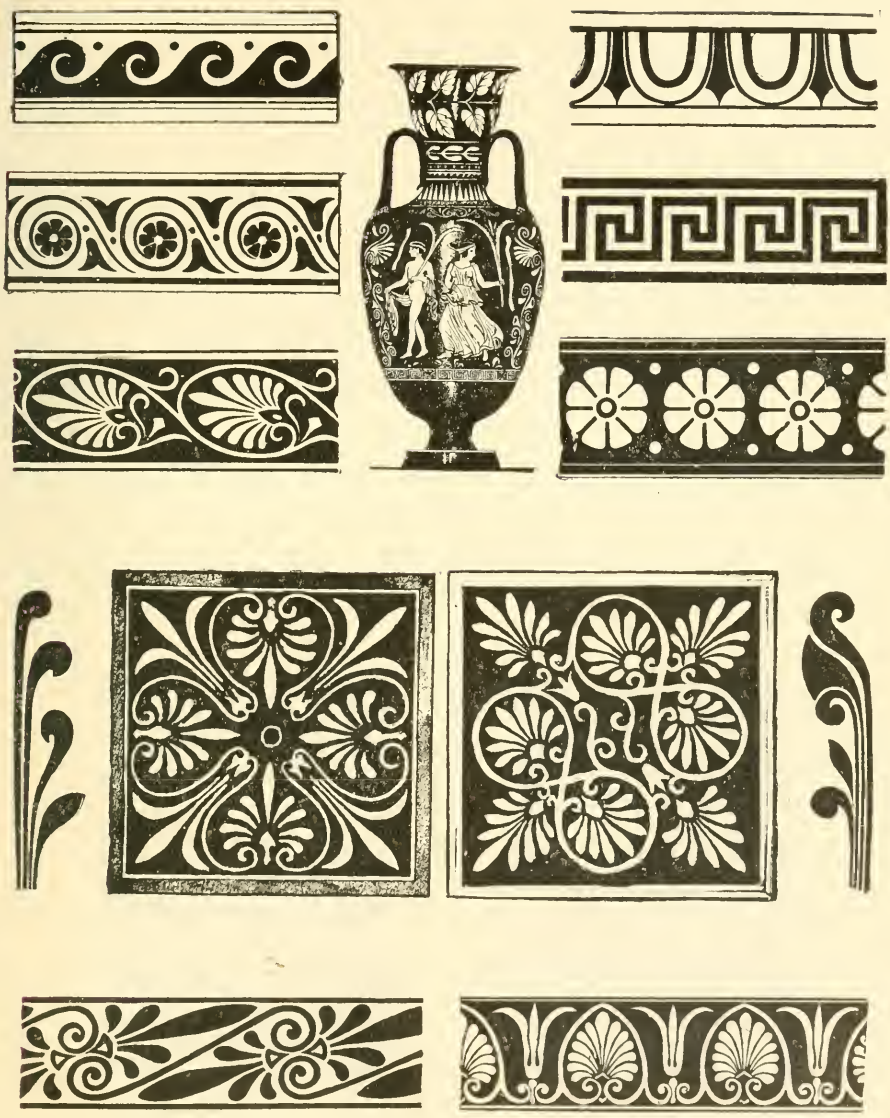
Greek Antefix.

Greek Anthemion.

Symbolic as it is, Egyptian ornament seems to be, after all, more external than essential, while Greek ornament carries the spirit of glad and lightsome growth in lines of eternal beauty.

The Exercise. — The examples given in the drawing-book will be found also on page 213. Two of the borders show the Greek disk. Variations of the anthemion are seen in the other examples; these will be very interesting for sketches in connection with the exercise. Any of these ornaments may be copied, enlarged.

As so much of this work was by the brush, and therefore in masses of color rather than in outline, a brush reproduction of it is extremely satisfactory, and is recommended where school conditions allow it. The brush allows great freedom, and leads to graceful results as well as breadth of effect. The brush, however, cannot take the place of the pencil; each has its own peculiar fitness and excellences, and each has its own technique. The use of colored paper is also extremely satisfactory for this ornament. The colors used should be, as a general thing, in the



Greek Painted Ornament.

grays, preferably the red, orange, and yellow grays (assortment F) for Greek ornament, as more nearly approaching the color of the burnt clays. The green, blue, and violet grays (assortment FF) will not, however, be inappropriate.

Greek ornament should be studied closely for its elements of beauty before attempting to reproduce it. And then its reproduction in color or by drawing should be a means for its further study. The purpose of these exercises in Greek ornament is not to secure a reproduction of some example, but to lead the pupil through study and drawing to a feeling for its beauty. Freedom in drawing is therefore essential, and mechanical drawing has no place here. Michel Angelo said, "An artist must have his necessary tools, not in the hand, but in the eye."

And Ruskin says (referring to free-hand drawing), that the human hand "is the most perfect agent of material power existing in the universe," and that the highest art calls for "the action of the hand at its finest, with that of the heart at its fullest."

Or, pupils may design ornament for borders or to fill squares, using some of the elements in the examples, or they may design their own elements. Lead the pupils to study the beauty of the past, but bring their work as near to the present as possible. Some designs from brush elements, in which distribution and balance have been well considered, are given below.

THE SUBJECT OF CONSTRUCTION.

Throughout this course of instruction, pupils are led not only to observe the facts of existing forms, but also to study simple practical needs in everyday life and to think out ways of meeting such needs through constructive design. In the earlier books of the series the thought was directed chiefly to the special social need to be reached in each case rather than upon the technical convention involved.

From the present point onwards it is desired to lead pupils' thought higher and farther back into constructive problems, helping them to discover and grasp certain great, underlying principles of construction which pertain to all industrial creation, — fitness of form to purpose, fitness of material to both form and purpose, serviceableness in use, appropriate beauty in proportion, in line, and in finish expressed in industrial convention. This technical knowledge, along with the development of reasoning power, secures practical efficiency in industrial creations.

BOOK 8, PAGE 8. SIXTH YEAR BOOK, PAGE 24

CONSTRUCTION.

TYPE SOLIDS. — Facts of Form. Working-drawings. Conventions.
ART. — Working-drawings. Manner of Drawing.

[The pupil studies the working-drawings on the drawing-book page, reads them, thinking of the facts of form expressed, thinks out and sketches the working-drawings of one or more of the simpler type solids, or a simple object, plans for placing the working-drawing of one of these on the drawing-book page, and draws it in the book, seeking for accuracy in the work.]

Working-drawings. — A *working-drawing* is the expression of the facts of form necessary for the complete understanding of the structure of an object.

A *view* is an expression, in two dimensions, of all the facts of an object that can be discovered from a single point of observation. Views and working-drawings are seen on page 217.

Explanation of Illustrations. — Fig. 1. Front and top views of a basin.

Fig. 2. Working-drawing of a pail — front and top views. The handle of the pail is drawn separately, to prevent confusion.

Fig. 3. Working-drawing of an awl — front and end views.

Fig. 4. Working-drawing of a rolling-pin — top, end and section views. A partial section of the rolling-pin is given in the front view, as that is all that is necessary to show the construction of the handles. Notice that the shank around which the handles turn is not sectioned, and that the section lines of the handle and of the rolling-pin run in opposite directions. This method is employed when the section gives two cut surfaces coming together.

Fig. 5. Front, end, and bottom views of the hammer, with a vertical section of the head and a cross section of the handle.

Value of Working-drawings. — Lead the children to an understanding of the value of working-drawings. (See CONSTRUCTION, page 38.) Through such drawings the designer of an ocean steamship or a yacht shows his idea of the lines of strength, speed, and beauty, and the details necessary to its construction. It is through the medium of such drawings that some of the greatest thoughts of the civilized world are expressed, and great industrial creations like the Brooklyn and St. Louis bridges are brought into existence.

Bring to the pupils blue-prints and well-finished working-drawings which have been used, to show them more fully the meaning of the work they are about to undertake. If examples of the objects made from these drawings can be shown,

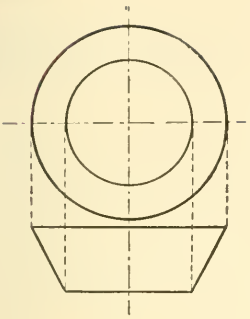


FIG. 1.

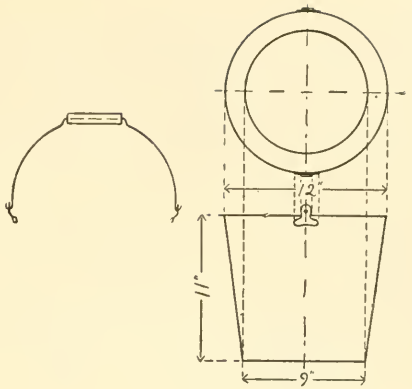


FIG. 2.

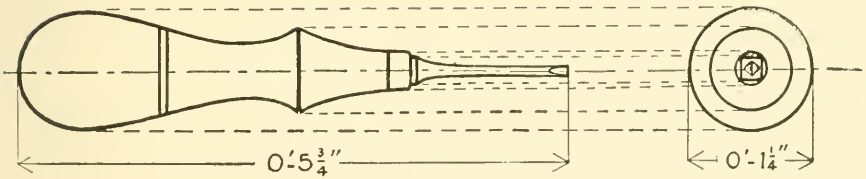


FIG. 3.

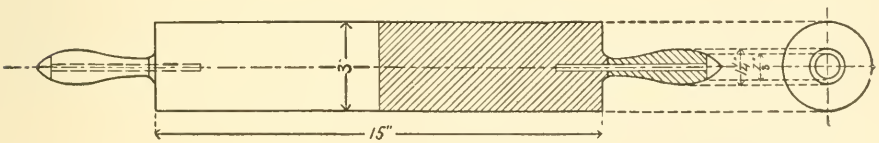


FIG. 4.

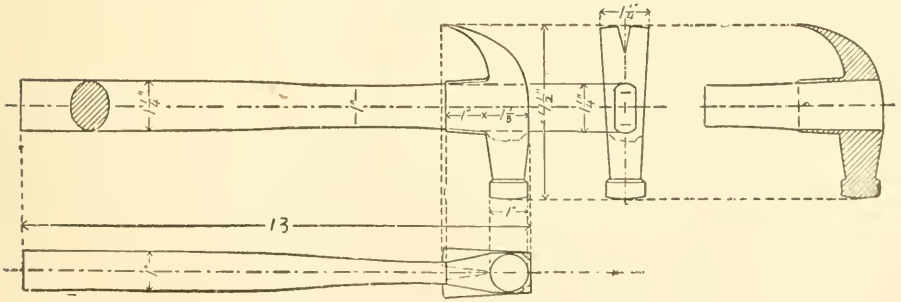


FIG. 5.

this work will be more effective. Frequently the pupils can bring these drawings from shops they are allowed to visit.

A "field-day" might be given to visiting a local manufactory or shop, where working-drawings may be seen in the hands of the workmen and possibly pupils might be shown how the workmen use them.

Preparation for Working-drawings. — Most of the pupils using this book will already have had considerable practice in reading and making working-drawings of objects and type-forms, but a review will probably be necessary to recall the conventions. Blackboard drawing, by teacher or pupils, contrasting the appearance and the views of some common objects, or of the type models will refresh the memory upon the conventions of working-drawings. (Illustrated below.)

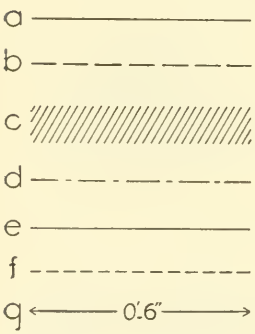


Fig. 1.

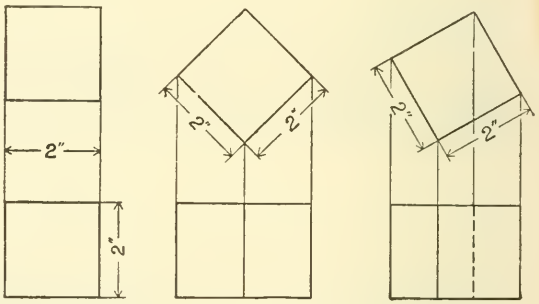
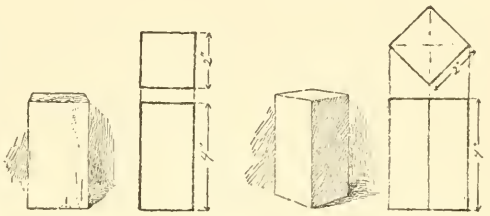


Fig. 2.

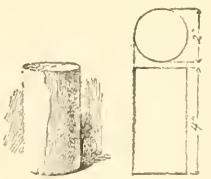
1. The arrangement of views. See Fig. 2.
2. Lines of the object. Fig. 1.
   - *a*. Full line for visible edges or outlines.
   - *b*. Long-dash line for invisible edges or outlines.
   - *c*. Half-tinting or section lines.
3. Helping or construction lines. Fig. 1.
   - *d*. Short-and-long-dash line for centre line.
   - *e*. *f*. Light, full line or short-dash line for extension or connecting lines.
   - *g*. Light broken line with arrowheads and figuring for dimension lines. The points of the arrowheads show the limit of the dimension. The dimension line should be as long as the edge or the surface figured, so that the arrow points may exactly indicate the extreme limits of the edge or surface in question. Feet and inches expressed as in duodecimals, *e.g.*, 2′ 6″ (two feet, six inches). Line of fraction horizontal; as $\frac{1}{2}$.

A good method for class work in reading working-drawings is to have the pupils draw the appearance from a working-drawing. Making a working-drawing from an appearance-drawing is also good practice.

The type-forms are at this stage so familiar that a working-drawing of any one of them should at once suggest the model itself so clearly to the mind of the pupil that he can represent it pictorially. For instance, if the teacher draws upon the board the front and top views of a vertical square prism, facing, the pupil should be able to make a picture of it or draw its appearance in that same position. If the views show the prism turned, or in a horizontal position, he should be able to express the fact pictorially. This is a very graphic way of "reading" views or telling what they mean, and after a brief review of this sort the pupil will probably be able to draw from memory views of the type-forms, and this work may easily be extended to include familiar objects.



Doubtless, in many of the pupils' first attempts at giving views of objects they will show that their ideas of working-drawings are confused with ideas of pictorial or appearance-drawings, but the wise teacher will utilize their failures to help them to a better understanding. Let the appearance-drawing be made on the board, and the pupils try to point out where in that drawing they can read the necessary facts of form and size, and they will see at once how inadequately and inaccurately, for purposes of construction, those facts are expressed. From the picture of the vertical cylinder, for example, height and width from left to right can be ascertained with a fair degree of accuracy, but the width from back to front cannot be definitely learned, and there is nothing in the drawing to tell the actual shape of the top face. It may, however, be clearly shown in a top view, with the front view properly placed to express the other necessary facts. The same method applied to common objects helps pupils to see in what way the story must be told to the workman. They enjoy this translating from one kind of drawing into the other, and the demand which it makes upon them for a clear mental concept helps to develop their power of abstract thought. Another opportunity for the exercise of this power may be gained by giving them a drawing of one view of a familiar object as a starting point, and letting them draw the other views.



The top views of many cylindric, conic, and hemispheric objects, which we

know are circular in section, are readily inferred from the front views. The top view of a basin, cup, dipper, can, funnel, bowl, or vase would be expressed by one or more circles, varying in diameter according to the profile of the object as given in its front view. The front views of such objects as those illustrated below (Figs. 1–3), and the statement that the tops and bases are circular, would be enough to

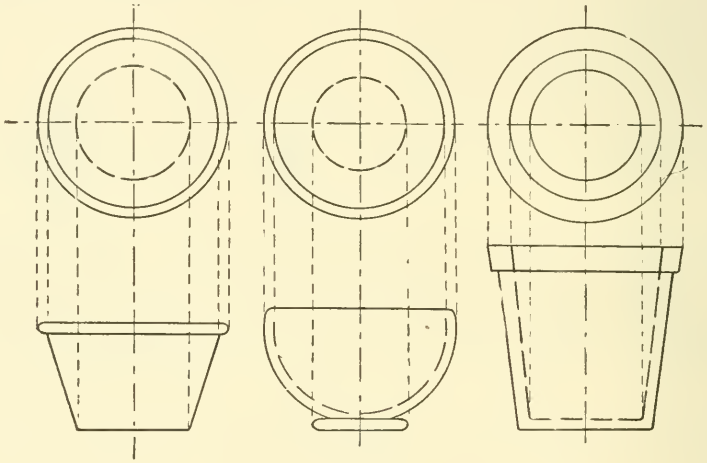


FIG. 1. FIG. 2. FIG. 3.

tell a pupil what the top views must be. The front view of a rolling-pin (see p. 217) recalls at once, to the mind of any one familiar with it, its cylindric form, and its end view could easily be given. When the end view, as in the rolling-pin, or the top view, as in a bowl or jar, shows only circles, it is frequently omitted in practice. It seems advisable, however, that pupils of this grade should continue to use it, for the sake of clearly expressing the mental concept of form. The blackboard should be used very freely in all of this work.

Preparation for the Lesson. — Lead the pupils to observe and bring in freehand pictorial sketches or working drawings of as many different mechanical appliances and articles for domestic use as possible. Many will be able to go to shops for this purpose. Others can bring in sketches of tools and household utensils.

"Nothing useless is, or low;
Each thing in its place is best."

These sketches may not be accurate, but as an expression of individual observation, and as material for future work, they will be valuable. Through the attempt to

make them, the children grow into a more sympathetic intelligence and knowledge of the thought that has been given to the making of even common things. This work touches the home life of the children and gives the teacher an opportunity to engage the interest of the parents, so that the spirit and effect of the work may be broadened. If these home sketches are not discarded, but are made the subject of a brief criticism with explanation of different points, they will be useful to all the members of the class.

The pupils should study and read the working-drawings on page 8 of the drawing-book. Lead them to verify all they read in these drawings by referring to the models from which they are made, and so to appreciate the beautifully direct language of the working-drawing known as "conventions." These conventions are illustrated on page 218.

If it is desired that this constructive work shall be instrumental rather than freehand, the teacher is referred to pages 224–235 for suggestions as to teaching the use of instruments and geometric problems. It will be noted, however, that freehand drawing is still continued in construction. This should always be the case. Facility in making freehand sketches for working-drawings is essential for every draughtsman who makes drawings for constructive purposes. It is often necessary to make rapid drawings, freehand, in shops or other places where instruments cannot be made available — the careful instrumental drawing being made when more time is at command, and in a place where instruments can be profitably used.

Illustrations on the Drawing-book Page. — *Triangular Prism.* — The width from back to front of the triangular prism is shown in the top view and in the side view by the dotted lines.

Hollow Cylinder. Sections. — The front and top views of the hollow cylinder give clearly the facts of its form, the thickness of the wall being shown in the front view by the dash lines which represent invisible edges. To make this still more clear, a "sectioned" view is given at the right. Imagine the cylinder cut in halves from top to bottom. The back half would present the appearance shown in the sectioned view, the oblique lines or sectioning representing the cut surface.

Hollow Flanged Cylinder. — In the front view, the part at the left is shown in full, and that at the right is drawn in section. The top view is drawn in full, as if the front view were not sectioned.

Suggestions to Pupils for Study of Illustrations. — *Cube.* — Place a cube in the different positions indicated by the drawings at the top of the page of the drawing-book. Where is the height of the cube shown? The width from left to right? The width from back to front? How long must the dimension lines be? Notice in the drawing the arrowheads.

Triangular Prism. — In the drawing of the triangular prism, which view tells you that it is the triangular prism? If it were a square prism, what would the top view be? Where is the height indicated? The width from left to right? The width from back to front? Place your model with one of its oblong faces vertical and facing you. Draw its top and front views on the blackboard. What dimensions are shown in the top view? What invisible edge should be represented in the front view?

Hexagonal Prism. — In the drawing of the hexagonal prism where is the width of the oblong faces indicated? Which face is facing you? Turn the model at right angles to the position indicated in the drawing, still keeping it vertical. How many faces must you show in the front view of the model in that position? What must be their width from left to right? What view would give you the width of the model from left to right? Which view would you draw first?

Cylinder. — Study the views of the hollow cylinder to see if you can find there all the facts of form and dimension. For what is the centre line used? What is the meaning of the heavy dash lines in the front view? Notice how clearly the thickness of the wall is indicated in the sectional view shown at the right. Sections are often used to show details of construction which would not be clear otherwise.

Hollow Flanged Cylinder. — What is the model shown in the drawing at the right? How is it sectioned?

Suggestions to Pupils for Drawing. — Choose the model and the position in which it is to be placed. Sketch the views necessary to show all the facts of the model, using the conventions correctly. Study the space on the drawing-book page. Sketch the views of the model again, studying for the best arrangement of the drawing for the page. Sketch all lines lightly, and finish the drawing with the required conventions.

Additional Exercises. — The pupils will have learned in the working-drawings of type forms, some things to apply in the drawing of common objects. Suggest certain objects, involving similar principles. A mallet, a hammer, or a rolling-pin would be good illustrations of the use of sectional views in showing the details of construction in the making and joining of the handles. (See illustrations, page 215.)

Whatever is chosen as a suitable object, the pupils should be led to see the adaptation of its form to the purpose for which it is intended. In the hammer, for instance, the length and size of the handle must be sufficient to balance the head. The size and proportion of the head should be suited to the work it has to do. A large, heavy head is necessary for large nails, while the head of a tack hammer should be rather long and slender to hit a small tack without pounding the fingers.

The handle of a rolling-pin is admirably formed to fit the hand, while its curved outline is as pleasant to see as it is to grasp.

Encourage pupils to feel that if the object which they draw is not pleasing, they may make in their drawing such changes as would render it more useful and more beautiful. Keep constantly in mind the thought that fitness to purpose is the great essential in the making or the designing of any object, and, when that is secured, beauty of proportion and outline must be considered.

BROOKLYN BRIDGE.

No lifeless thing of iron and stone,
  But sentient, as her children are,
Nature accepts you as her own,
  Kin to the cataract and the star.

She marks your vast, sufficing plan,
  Cable and girder, bolt and rod,
And takes you, from the hand of man,
  For some new handiwork of God.

You thrill through all your chords of steel
  Responsive to the living sun;
And quickening in your nerves you feel
  Life with its conscious currents run.

Your anchorage upbears the march
  Of time and the eternal powers.
The sky admits your perfect arch,
  The rock respects your stable towers.

—CHAS. G. D. ROBERTS, in *Atlantic Monthly.*

THE USE OF INSTRUMENTS.

Instruments. — A knowledge of the use of instruments, and facility in using them, are indispensable to every mechanical draughtsman. As the work in construction grows more complicated, the necessity arises for the use of instruments in order to obtain very accurate work with great readiness. Two instruments — the compasses and the rule — are introduced with this book. This exercise gives pupils an opportunity for obtaining a little facility in handling these instruments before endeavoring to use them in working problems. It will be noted, however, that free-hand drawing is still continued in construction. This should always be the case. Facility in making free-hand sketches for working-drawings is essential for every draughtsman who makes drawings for constructive purposes. In many cases a free-hand drawing is all that is needed. In other cases, it is frequently necessary to make rapid drawings, free-hand, in shops or other places where instruments cannot be made available, — the careful instrument-drawing being made when more time is at command, and in a place where instruments can profitably be used. Make these points clear to pupils before beginning the use of instruments.

The use of the instruments — compasses and rule — should be carefully taught and drilled upon at the start. The pencils used in instrumental work should be harder than those used in free-hand work. Learning to keep the hard pencil well sharpened, to hold it erect when marking points or ruling lines, and to use it either lightly or more firmly, is an important part of the first steps in this work. Learning to handle the rule deftly and noiselessly, to lift it as little as possible, to take as many measures as convenient without moving it, to measure by it with precision, and to avoid using the "end inch," is important in order to secure rapid, thoughtful, and accurate work.

Before attempting any work with compasses, the class should be made somewhat familiar with their appearance and use in the hand of a teacher. Compasses are used to describe circles and arcs, and to set off distances. They have a head and two legs. In describing a circle or an arc, the compasses are held by the head, the point of one leg is fixed, the compasses are turned, and the point of the other leg describes a circle about the fixed point. It is, of course, essential that the distance between the two points shall remain the same while the circle is being described. A way to hold the compasses without changing the angle between the legs must be found.

Examine the head of the compasses. It is cylindric, having two plane faces and a curved face. If the head is held by its two plane faces, the grasp will never change the direction of the legs. If the head is held by the curved face, as beginners are very apt to hold it, the pressure of the grasp is likely to close the compasses more or less, and of course spoil the circle or arc.

For describing a circle or arc, the plane faces of the head should be grasped easily with the thumb and second finger, the first finger resting on the curved face of the head. This is the position for beginning (see Fig. 1). Practice pupils in simply taking hold of the compasses properly. Be sure that every pupil has the right grasp. Time spent in this practice, when the compasses are first put into the hands of pupils, will be time saved in the end.

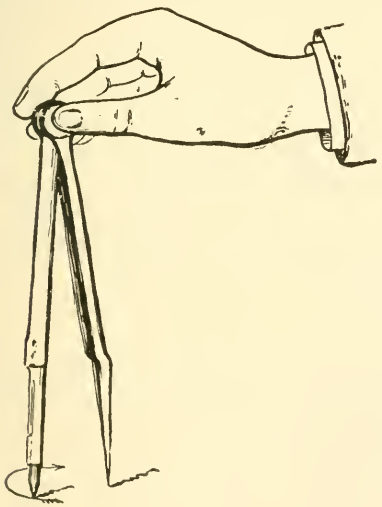


FIG. 1.

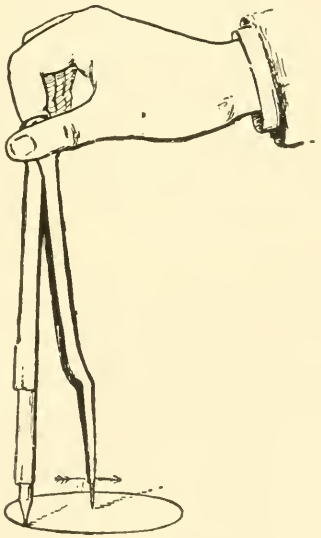


FIG. 2.

In describing the circle, there should be a slight (and but a slight) pressure on the fixed point, to keep it in place. The compasses should be so placed that the pencil point will be at the left of and below the centre; that is, so that a line connecting the points would be at about an angle of 45° to a horizontal line. Then the head is rolled between the thumb and fingers on the ball of the thumb, the first finger gradually taking the place of the second, until finally, when the circle is fully

described, the position is that seen in Fig. 2. This movement should be carefully studied and practised until a circle can be drawn with one sweep of the instrument.

While practising the use of the compasses, geometric terms may be recalled. When the metal point of the compasses is fixed on the paper, for the purpose of describing a circle or an arc, the point where it is fixed is said to be taken as a centre. The distance between the metal point and the pencil point is then called a radius. "Take any radius," means open the compasses more or less. "Take a radius of 1" " (one inch), means open the compasses so that the distance between the points is 1". This will give practice in taking measures from the rule with the compasses, which should be held perpendicular to the rule. "Take any point as a centre," means fix the metal point on the paper or board. "Take C as a centre," means fix the metal point at the point marked C. Having explained these phrases, let pupils practice describing single circles and concentric circles on practice paper. Limit them somewhat as to centre and radius.

Exercises. — With a radius equal to the margin desired, and the corner of the sheet of paper as a centre, describe a quadrant, the ends of which shall touch the adjacent edges of the paper. With these points as centres, and the same radius, draw the intersecting arcs which will give the marginal corner. The space within the margin may be divided into six rectangles, for the following exercises: —

1. **Finding the centre** of a rectangle. The intersecting point of the diagonals will be the centre.
2. **Concentric circles,** first finding a centre as above.
3. **Semicircle, Diameter, Chord, Arc, Radius.**

The figure ABDFE is a *circle* — a plane figure bounded by a curved line called a *circumference*, every point of which is equally distant from a point within called the *centre*.

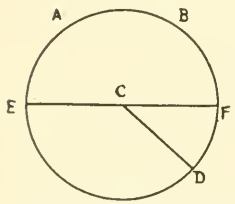


Fig. 1.

Any line, as CD, passing from the centre to the circumference, is called a *radius* — the plural form is *radii*. A line, as EF, passing through the centre of the circle and terminating in the circumference, is called a *diameter*. Half a circle, as GIH, is called a *semicircle*. Any part of a circumference, as JKL, is called an *arc;* a line connecting the extremities of the arc, as JL, is called a *chord*.

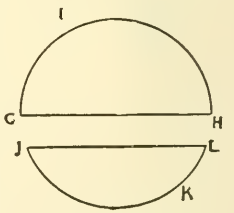
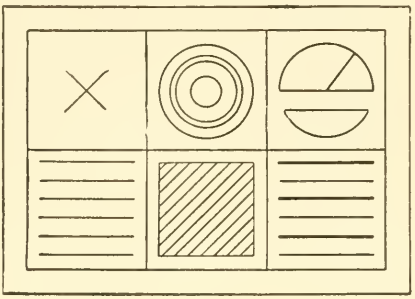


Fig. 2

4. **Horizontal lines.**
5. **Oblique lines** (used in sections).
6. **Horizontal lines varying in width.**

Caution the pupils against too great pressure on the metal point. The pressure should be so light as to make no hole in the paper at the point taken as centre.

Show also how to use the rule. The rule is to be used for ruling and for measuring. For ruling, it must be placed with great care a slight distance from the points to be connected, so as to allow for the thickness of the pencil lead, and must be held firmly with the thumb and two fingers of the left hand. Question about the divisions on the rule, to be sure that they are understood. The illustration given opposite shows a good arrangement of the exercises for practice in the use of compasses and geometric terms, that are suggested on the opposite page.



Geometric Problems. — Geometry is the basis of accurate instrumental drawing. The drawing-board and T-square, used by mechanical draughtsmen, give a short cut to accuracy, and in many schools they are used by the pupils. An understanding of geometric principles is nevertheless necessary, and the study of geometric problems is of great disciplinary value.

The main effort should be to fix the geometric laws and the relation between problems. For example, the axiom, "two points of a line determine its direction," is at the root of all the relation of parallels. Children do not always see parallels. Indeed, they seldom notice parallels that are out of the more ordinary positions until trained to observe them. In teaching Problem 1, care should be taken that this law shall become general in its application, so that the pupils will be able to use it under all possible conditions.

Another law governs all bisection, whether of line, arc, or angle, and this law should become the possession of the pupils.

As for relations, the equilateral triangle is found in the hexagon, and is easily made in the trisected semicircle, while both the equilateral triangle and the trisected semicircle go into the making of the regular hexagon.

In teaching geometric problems, while dictation must necessarily be used, the work should not stop with dictation, but the pupils should be led to realize the truths worked out under dictation, and to relate these truths.

The following list includes all the problems that will be necessary for the present work in Construction. : —

Problem 1. — *To draw a line parallel to a given line.*
Problem 2. — *To bisect a line, or to draw a line perpendicular to it at its centre.*
Problem 3. — *To bisect an arc.*
Problem 4. — *To bisect an angle.*
Problem 5. — *To construct an equilateral triangle on a given base.*
Problem 6. — *To trisect a semicircle.*
Problem 7. — *To draw a regular hexagon.*
Problem 8. — *To draw a regular hexagon on a given base.*
Problem 9. — *To draw a perpendicular at the end of a given line.*
Problem 10. — *To construct angles of 90° and 45° at a point upon a given line.*
Problem 11. — *To construct angles of 60° and 30° at a point upon a given line.*

Method of Development. — Exercises in the development of some of these problems are given as suggestions to the teacher of good methods, by which pupils can be led to think out their solution.

Problem 1. — Begin the work by giving the following dictation exercise. The questions and answers are merely suggestive ; take your own method of leading the pupils to discover the process.

Dictation. 1. — Draw a horizontal line 5 inches long, marking the ends A and B. With a radius of 1 inch and A as a centre describe an arc intersecting the line at the right of A, and mark that point C. With C as a centre, and radius CA, describe a semicircle on the line AB. With the right end of the curve just drawn, as a centre, and the same radius, describe a second semicircle. In the same way, describe a third and a fourth semicircle successively on the line AB. Rule a line tangential to, or touching, the highest points in the four semicircles. Number this line 1 2. The letters and figures refer to the illustrations on page 229.

Ask pupils now to lay their instruments back on their desks, and study the drawing which they have just made. Ask —

How does the line 1 2 compare in direction with the line AB? — The line 1 2 is parallel to the line AB.

When is one line parallel to another? — When the lines are the same distance apart throughout their entire length.

Prove that 1 2 and AB are the same distance apart throughout their entire length. — The same radius was taken for all the semicircles, and the line 1 2 just touches the highest point in each semicircle.

Good. Now, how can you draw a line parallel to DE? — By drawing on DE, as we did on AB, four semicircles with the same radius, and then drawing a line tangential to them.

Now think; cannot a line be drawn parallel to DE with less work? — Yes; with only one semicircle at each end.

Come to the board and do it. Now, can this be done with any less work? — Yes; by drawing just the top of each of the two semicircles.

Right. What is a part of a circumference called? — An arc.

Now I think you can tell me about drawing a line parallel to DE. How many arcs will be necessary? — Two.

Where must their centres be? — On the line DE, near the ends.

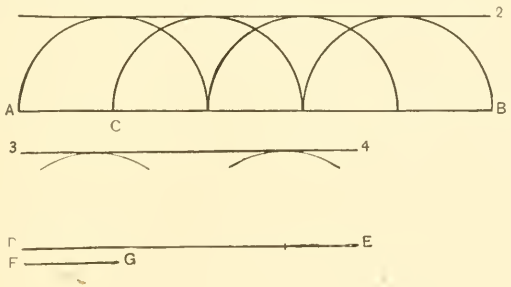
Where must the arcs be drawn? — Above the centres.

How long must the arcs be? — Long enough to show plainly the highest points.

What radius? — A radius equal to the required distance between the lines.

Here is a line, DE, on the board, and here is a shorter line, FG. Come to the board, and draw a line parallel to DE, at a distance FG.

2. Draw a line parallel to DE, at a distance FG. Make the arcs fine and light. The letters refer to the illustration below. The drawing required from pupils in this exercise is here illustrated.

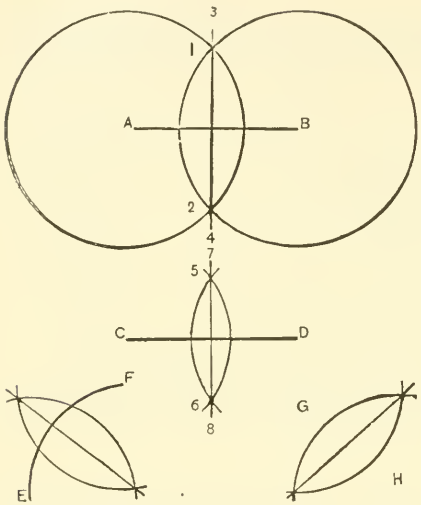


When the work is completed, the pupils should be led to state the problem, and the manner of working it, as follows: —

PROBLEM 1. — *To draw a line parallel to a given line.*

Let DE be the given line. Take any two points in the line DE, near the ends, as centres, and, with a radius equal to the required distance between the lines, describe two arcs above the centres. Draw a line 3 4 tangential to, or touching, the arcs. 3 4 will be the required line.

Problem 2. — Do not state to the pupils the object of this exercise, but give the following dictation.



Dictation. — With A as centre, and a radius greater than half of AB, describe a circle. With B as centre, and the same radius, describe a circle intersecting the first. Mark the points of intersection 1 and 2. Rule a line, 3 4, through 1 and 2.

Ask pupils now to lay their instruments back on the desks, and study their drawing. Ask —

How does the line 3 4 divide the line AB? — In the centre. The line bisects 3 4 the line AB.

How does the line 3 4 compare in direction with the line AB? — The line is perpendicular to AB.

The line 3 4 is perpendicular to AB at what point? — At the centre of AB.

Here is a line, AB, on the board. Come and bisect it. How did you do it? — By drawing two circles and a line to connect the points of intersection.

Who can do it with less work? Come and do it. How have you done it? — Instead of whole circles, I drew arcs long enough to intersect above and below the line.

This line, AB, on the board is bisected. Here is another line, CD. Who can draw a line perpendicular to CD at its centre? Come and do it. How many arcs will be necessary? — Two. How long must they be? — Long enough to intersect above and below the line.

What centres must be taken? — The ends of the line.

What radius must be taken for the first arc? — A radius greater than half the line.

What radius for the second arc? — The same as for the first.

When this work is completed, ask the pupils to state the problem and the manner of working it as follows: —

PROBLEM 2. — *To bisect a line, or to draw a line perpendicular to it at its centre.*

Let CD be the given line. With a radius greater than half the line, and the points C and D as centres, describe, with the same radius, arcs intersecting each other above and below the line CD, in points 5 and 6. Draw a line, 7 8, through points 5 and 6. The line 7 8 bisects the line CD, and is also perpendicular to the line CD at its centre.

Problem 3. — In a similar manner, lead to a statement of Problem 3.

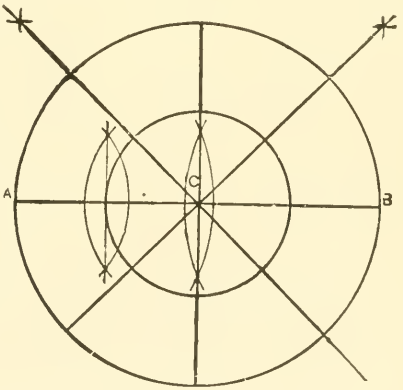
PROBLEM 3. — *To bisect an arc.*

Let EF be the given arc. With a radius greater than half the distance from E to F, and the points E and F as centres, describe arcs intersecting each other above and below the arc EF. A line through these points of intersection bisects the arc.

Problem 4. — The following dictation illustrates the application of preceding problems in the development of Problem 4. The resulting figure should be like the illustration below.

Dictation. — Draw a horizontal line $2\frac{1}{2}''$ in length and mark the ends GH. Bisect GH by Problem 2, and mark the centre I. With I as a centre, and the radius GI, describe a circle.

Draw the vertical diameter of the circle by continuing the line of bisection each way to meet the circumference. Mark this vertical diameter JK. Draw an oblique diameter which shall bisect two diametrically opposite quarter circles or quadrants. How can this be done? By bisecting the arcs GJ and JH. With G and J as centres, and a radius greater than GJ, draw arcs intersecting in L. Draw a line from L through I to the opposite part of the circumference. Bisect GI. With I as a centre, and a radius equal to half of GI, describe a circle.



Study the figure as in the preceding problems: —

What is the angle GIJ? — An angle of 90°, because it is a quarter circle.

How does the line LI divide it? — It bisects it.

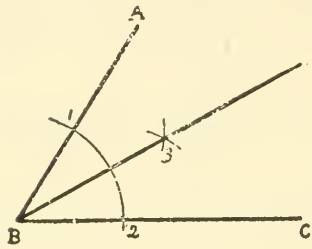
How did we get L? — By taking the ends of the arc GJ as centres and describing intersecting arcs.

What is the angle JIH? — An angle of 90°. (The points where the small circle intersects the lines JI and HI may be marked MN.)

What is the angle MIN? — An angle of 90°. Bisect it as in the case of GIJ and extend the line of bisection through to the circumference so as to give another oblique diameter of the large circle.

How does this line divide the angle HIJ? — It bisects it.

It will be seen that this work leads the pupils directly to the bisection of an angle. In giving this work, try to have pupils discover for themselves the relation between the different problems, and to feel that bisection in all cases rests on the same principles.

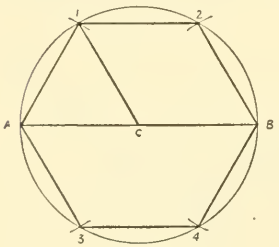


Let the previous work lead to the following statement of —

PROBLEM 4. — *To bisect an angle.*

Let ABC be a given angle to be bisected. With B as centre, and any radius less than BC, draw an arc intersecting AB and BC at 1 2. With 1 and 2 as centres, and the same radius, draw arcs intersecting at 3. Draw B 3. This line will bisect the angle ABC.

Problems 5, 6, 7, 8. — Do not state the object of the exercise, but begin the work by giving the following dictation : —



Dictation. — With any desired radius describe a circle, and mark its centre C. Draw its horizontal diameter, AB. With AC as a radius and A and B as centres, construct arcs intersecting the circumference at 1, 2, 3, and 4. Rule lines connecting the adjacent intersecting points. Connect 1 and C.

Ask pupils now to lay their instruments back on their desks, and study the drawing which they have just made. Ask —

What is the figure A 1 C ? — A triangle. An equilateral triangle.

What is a triangle ? — A figure having three sides.

What is an equilateral triangle ? — An equilateral triangle is a triangle having three equal sides.

What is the base of a triangle ? — The base of a triangle is the side on which it seems to rest.

What is the base of the triangle 1 AC ? — AC.

Can you draw, with the aid of your compasses, an equilateral triangle on a given line, DE, as a base ? — Yes ; with DE as radius, and D and E as centres, draw quadrants, and rule lines from the point of intersection to D and E.

Come to the board and show how you would do it. Can it be done with less work ? — Yes ; with the same radius and centres, describe *short* arcs that will intersect above the centre of the line DE, and then rule lines from the point of intersection to D and E.

How is the semicircle A 1 2 B divided? — The semicircle is divided into three equal parts, that is, trisected.

How could you trisect a semicircumference with your compasses? — With the radius of the semicircle as radius, and with each end of the semicircle as centre, describe short arcs cutting the semicircumference.

Does A 3 4 B look like any figure that you have ever seen? — Does it look like a part of any figure that you have ever seen? — It looks like half a hexagon, — half the base of a hexagonal prism.

What is a hexagon? — A hexagon is a figure having six sides.

Yes; and when the sides are equal, the hexagon is called a regular hexagon. When they are unequal, the hexagon is called an irregular hexagon. Is A 3 4 B half of a regular hexagon, or of an irregular hexagon? — A 3 4 B is half of a regular hexagon.

How do you know that it is half of a *regular* hexagon? — Because A 3, 3 4 and 4 B, are all equal to the radius of the semicircle, and must, therefore, be equal to each other.

How could you complete the hexagon? — By drawing a semicircle above AB, trisecting it by the radius of the semicircle, and connecting the successive points by straight lines.

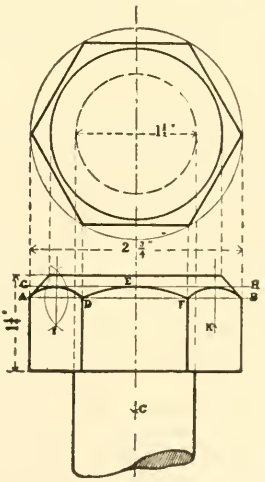
What would AB then be called? — The diameter of the circle.

Right in regard to the circle. What would it be called in relation to the hexagon? — The diameter.

No; a diameter of a rectilinear or straight-line figure connects the centres of opposite sides. What is the line that connects the opposite angles of a square called? — A diagonal.

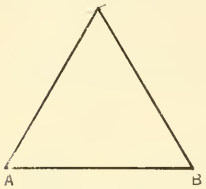
What does AB connect? — The opposite angles of the hexagon.

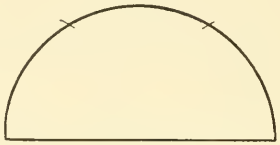
It is, then, the diagonal of the hexagon. Look now at your figure and think. How would you draw a regular hexagon with compasses? — Take a centre and a radius and draw a circle. Draw a diameter of the circle; with the radius of the circle, and with the ends of the diameter as centres, trisect each semicircle.

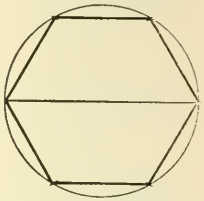


From this work there may be deduced the construction of an equilateral triangle, the trisection of a semicircle, and the construction of a hexagon under different conditions. The applications of these problems are frequent — one of these applications in machinery showing the working-drawing of a hexagonal bolt-head is given here.

This work should lead to the following statement of the following problems and the manner of working them: —







PROBLEM 5. — *To draw an equilateral triangle on a given base.*

Let DE be the given base. With DE as radius, and D and E as centres, describe arcs intersecting in point 1. Draw D 1 and E 1. 1 DE will be the required triangle.

PROBLEM 6. — *To trisect a semicircle.*

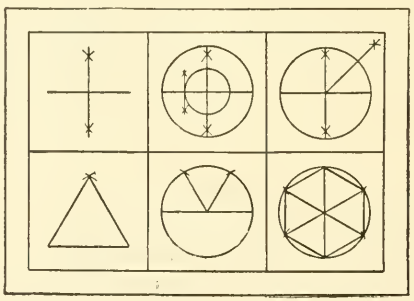
With the radius of the semicircle as a radius, and the ends of the semicircle as centres, describe short arcs intersecting the semicircle. The semicircle will then be trisected.

PROBLEM 7. — *To draw a regular hexagon.*

With any radius and any point as centre, describe a circle. Draw a diameter of the circle. Trisect the two semicircles. Connect the adjacent points by straight lines. The figure thus drawn will be a regular hexagon.

PROBLEM 8. — *To draw a regular hexagon on a given base.*

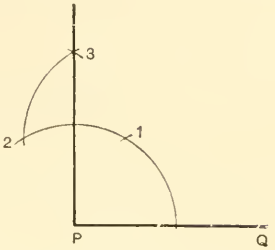
Construct on the given base an equilateral triangle by Problem 3. With the vertex of the triangle as centre, and one of its sides as radius, describe a circle. Complete the hexagon by Problem 5.



The illustration here shows a good arrangement of a page of problems.

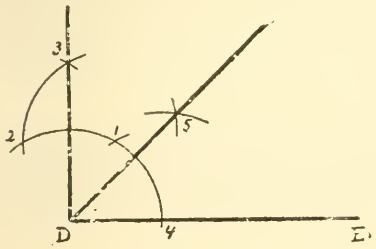
PROBLEM 9. — *To draw a perpendicular at the end of a given line.*

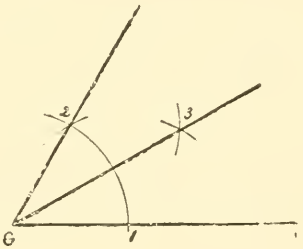
Let PQ be the given line. With P as centre, and any radius, describe about two-thirds of a semicircle, the right end of the arc resting on the line PQ. With the same radius, lay off equal distances on the arc. With 1 and 2 as centres, describe arcs which intersect at 3. Draw 3 P. This will be the required perpendicular.



PROBLEM 10. — *To construct angles of* 90° *and* 45° *at a point upon a given line.*

Let DE be the given line; it is required to make at D angles of 90° and 45°. At D erect a perpendicular, 3 D, by Problem 9. This gives the right angle or angle of 90°, 3 DE. Bisect this angle by Problem 4, by the line 5 D. The angles 3 D 5 and 5 DE are each angles of 45° as required.





PROBLEM 11. — *To construct angles of* 60° *and* 30° *at a given point upon a given line.*

Let GH be the given line. Angles of 60° and 30° are required at the point G. With G as centre, and any radius less than GH, draw an arc upwards from 1 on GH. Lay off on this from 1 the distance 1 2, equal to G 1. Draw G 2. The angle 2 G 1 is the angle of 60° required. Bisect this by Problem 4 by the line G 3. The angles 3 G 1 and 3 G 2 are angles of 30° as required.

Suggestions for the Blank Pages in Book 8.

As the work in drawing progresses, and both teachers and pupils become more familiar with the principles and the purpose of the work, exercises giving scope to individual preference, or leading to some end desirable for a special class, may very properly receive attention. The blank pages provide space for such optional work, the fact that the work is placed in the book insuring permanence and increasing the incentive to thoughtful effort. The teacher should give careful consideration to the special advantages and to the general deficiencies of the class in planning the work for these pages. It may be possible to make quite a close individual adaptation of the work. Any of the given subjects may be enlarged upon and advanced in thought. Drawing from the pose, copying simple drawings of good artists, or work in color, may be selected, according to the judgment of the teacher as to the needs and ability of the class.

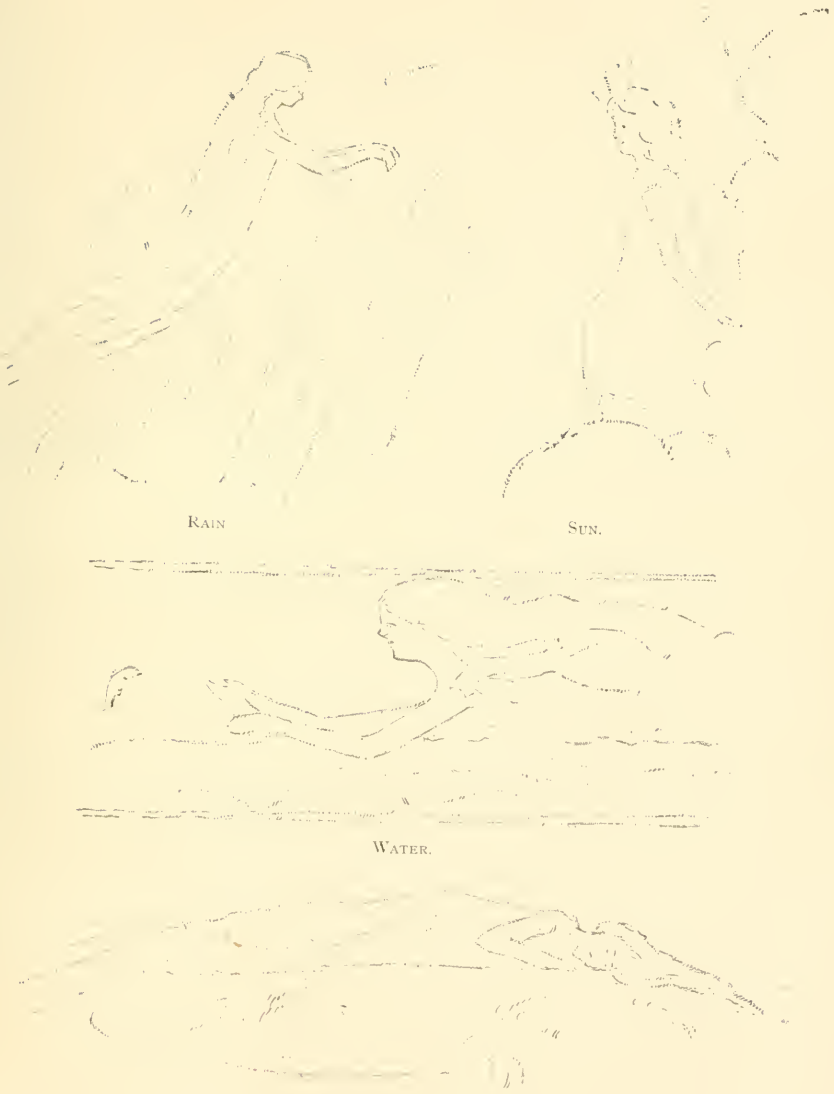
Some of the teachers may wish to use the space on all of the pages for progressive work in some particular line, as in construction, for which the manual text for each exercise provides abundant suggestion under the head of additional work, or for advanced work in decoration, and this will prove especially enjoyable if brush-work is possible.

Individual pupils may be permitted to copy some of the work on the illustrative pages. In some instances it may be considered desirable to devote these pages entirely to color work. The effect generally produced is not good when work in water color and in colored paper face each other.

For those who desire work definitely laid out, the following lines are suggested, to be carried out in the order given.

1. A study of fine pottery.
2. Animal studies.
3. Design with straight-line elements.
4. Figure drawing — imagination.

Study of Pottery. — For this page it would be well for the pupils, if possible, to visit an art museum and study Egyptian and Greek vases. Such work would strengthen the impression made by the study of historic ornament. They should be careful to select beautiful forms.



RAIN

SUN.

WATER.

EARTH.

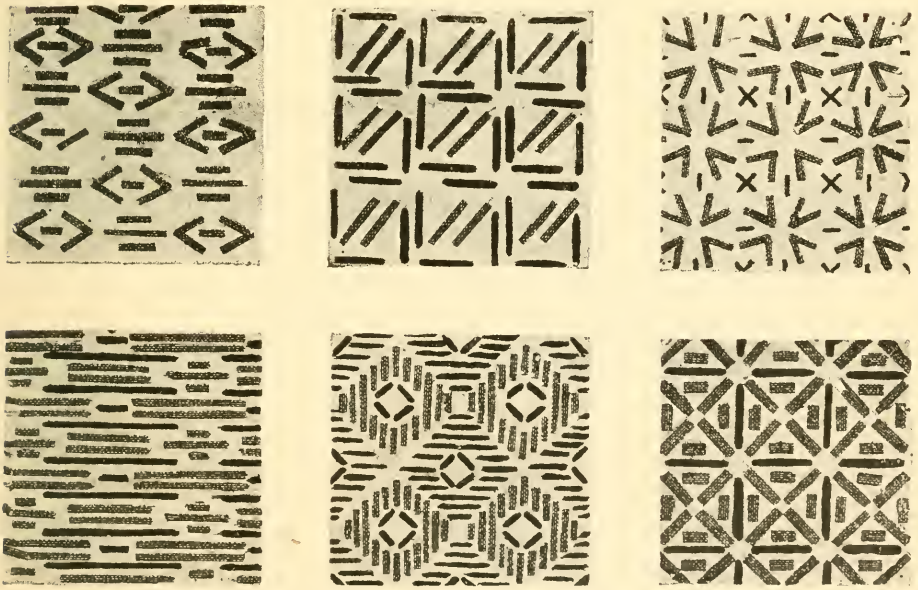
Drawings by a Sixth Year Pupil, reproduced in Miniature

Animal Studies. — The sketches for these studies may be made at home or wherever it is practicable. Mrs. Abby Morton Diaz, in writing upon cats, attributed to one the following poem, which well embodies the characteristics of a cat : —

"O lovely creature!
How elegant is your form!
How graceful your motions!
The fall of your feet is like the falling of snowflakes,
The gentle wave of your tail is like the wave of a soldier's plume,
Your eyes are greener than the leaves of the sacred catnip."

"We use, then, the real court language, which is part Egyptian; for we sprang from an Egyptian race."

It will be remembered that the cat was sacred to the Egyptians.



Design. — This might be border or surface design, using, as did the Egyptians, only straight line elements. Some designs by Miss Littig are given here.

Figure Drawing — Imagination. — Pupils will have had considerable practice in drawing from the pose, and might now try drawing from imagination. The drawings on Plates XVII. and XVIII. were by a pupil of the sixth year.

The following poem is suggestive of similar work : —

"And the Sun had on a crown
Wrought of gilded thistledown,
And a scarf of velvet vapor,
And a ravelled-rainbow gown ;
And his tinsel-tangled hair,
Tossed and lost upon the air,
Was glossier and flossier
Than any anywhere.

"And the South Wind's eyes were two
Little dancing drops of dew,
As he puffed his cheeks and pursed his lips,
And blew and blew and blew!
And the Sun's, like diamond-stone,
Brighter yet than ever known,
As he knit his brows and held his breath,
And shone and shone and shone!

"And the South Wind — he was dressed
With a ribbon round his breast
That floated, flapped, and fluttered
In a riotous unrest,
And a drapery of mist
From the shoulder and the wrist
Flowing backward with the motion
Of the waving hand he kissed."

— JAMES WHITCOMB RILEY.

Special Scheme. — A sequential scheme for the four pages could be made out, as creative work in constructive design ; for instance : —

1. Plan of room, designed by pupil.
2. Working-drawings of furniture, designed by pupil.
3. Design for wall paper, original with pupil.
4. Picture of one corner of the room.

THE NEW SHOES.

SLEEP.

FAIRIES

Drawings by a Sixth Year Pupil, reproduced in Miniature.

BOOK 8, PAGE 9. SIXTH YEAR BOOK, PAGE 25.

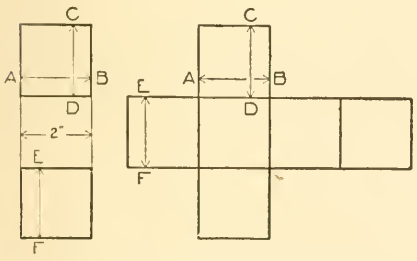
CONSTRUCTION.

TYPE SOLIDS. — Views. Patterns. Plans.

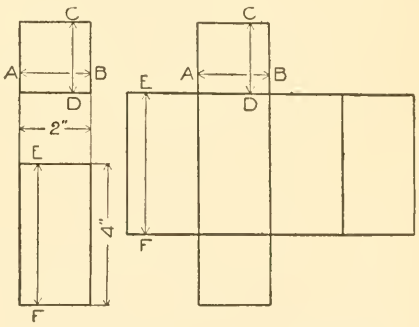
ART. — Views. Patterns. Plans. Manner of Drawing.

[The pupil studies the views and the development of the cone and the pyramid as shown on the drawing-book page, studies for the views, and develops the pattern of one or more of the type forms, and makes sketches, or makes plans for a house or room, chooses one for drawing on the drawing-book page, plans carefully for the placing, and draws it in the book, seeking for accuracy and neatness.]

Relation of Views and Patterns. — The pupils will take up this line of constructive work with the advantage of some previous experience in drawing, cutting, folding, and pasting patterns of cubes, prisms, plinths, and objects based on these. They come now to that stage in their work when they should see more definitely the relation between views and patterns. As views express the facts of length, breadth, and thickness, and as patterns are worked out by the same measures, it follows that there must be a direct connection between the two. Indeed, in many cases, the geometrical expression of the pattern is wholly dependent upon the working-drawing of the object, as in the square pyramid and cone which are given on page 9 of the drawing-book.



Each face of the pattern coinciding in measure with a view.

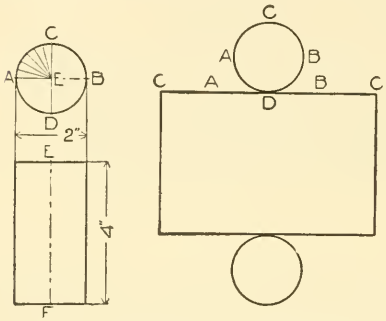


Square faces have the same measure as the top view, oblong faces as the front and side views.

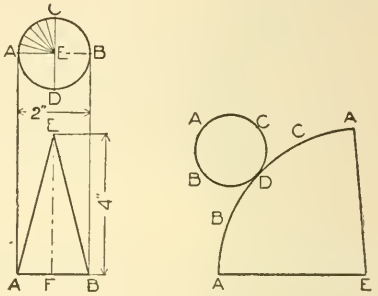
The drawings given above, and those on the drawing-book page, illustrate the coincidence of dimensions which must exist between the views and patterns.

The pupils should understand the geometric principles underlying the construction of such patterns, whether they work them out freehand or with instruments.

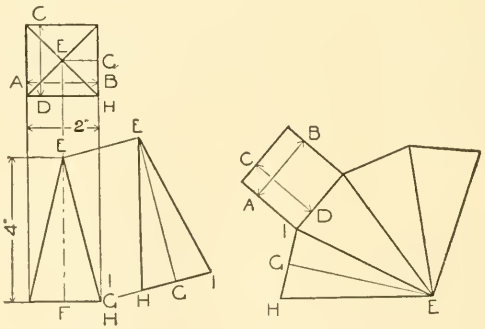
The illustrations given below show how measurements for pattern drawings may be obtained from working-drawings.



Circular faces have the same measures as top view. Curved face takes its measures from height and circumference of top view.



Circular face has the same measures as top view. Curved face takes its measures from slant height, and circumference of top view.



Square face has the same measures as top view. Triangular faces take their measures from distance from apex to corner of base (EH) and from side of base (CD).

The last illustration shows a method of obtaining the radius for the pattern differing from that shown on the drawing-book page. The distance EG is the same in the front view, in the drawing of the one face at the side, and in the developed surface. First EG in the front view is projected obliquely, to be used as the altitude of the triangular face. The construction of the triangle EHI on the line EG would give the slant height EH, which is used as the radius in developing the surface.

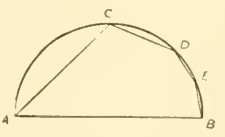
Preparation for the Study of Patterns. — Lead the pupils to study the patterns on the drawing-book page, and to understand something of the connection of these patterns with industry. If patterns or blue-prints of surface patterns of boxes, lamp-shades, or sheet metal work can be borrowed to illustrate the work in the classroom, they will help the pupils to comprehend the subject — especially if objects made from the patterns can be shown at the same time.

Some patterns of simple objects, cut out and folded, should be shown to the class. These can easily be made in advance of the lesson by the teacher or by one of the more capable pupils. Pasteboard boxes can be cut apart and spread out to show the pattern necessary for their construction.

Some small household utensils of tin or other sheet metal, are made now by pressing or stamping into form by means of moulds and dies, while others are still made in the tinsmith's fashion, by joining the different parts of the surface. It would be well to show pupils examples of each kind of work, explaining the difference. If there is a tinsmith in the locality, he might be willing to loan pieces of partially completed work. Sheet metal work is one of the most important industrial applications of surface development, and all these practical illustrations interest pupils in the work which is to follow.

Preparation for the Lesson. The Cone. — In the views and development of the cone on page 10 of the drawing-book, it will be observed that the measurement of the curved edge of the curved face has been determined geometrically. A paper model of a cone which can be unrolled will help the teacher in understanding and explaining this. The pattern of the base of the cone must, of course, be a circle of the same size as the top view. The pattern of the curved face will have one curved and two straight edges. The curved edge is a part of the circumference of a circle, of which the slant height of the cone is the radius. The straight edges will be equal in length to the slant height of the cone. The slant height of the cone may be seen in the oblique lines of the front view. The length of the curved edge must be equal to the circumference of the base, or to the circumference of the top view, which is just the same.

In the illustration the arc ACDEB is half of a circle, of which AB is the diameter, while it forms the chord of the arc. The difference between the chord AB and the arc ACDEB is greater proportionately than the difference between the chord AC and the arc AC. The smaller subdivisions of the arc lessen this difference, as seen at CD and DE; so, to obtain the measurement, the circumference of the top view is divided into sixteenths. These measure-



ments are set off upon the curved edge of the pattern of the curved face, thus fixing the length of the curved edge, and determining the points in the circumference from which the straight lines shall be drawn to the centre.

In the development of the cylinder, given on page 240, the length of the straight edges which are to be joined to the circumference of the bases is determined in the same way.

The Frustum of the Cone. — In the development of the frustum it will be seen that there are two curved edges, each being an arc of a circle. The radius of the first or larger one is the slant height of the cone as shown in the front view. The radius of the second is the slant height between the vertex of the cone and the top of the frustum.

The Square Pyramid. — The front view of the square pyramid does not give the true slant height. If the model is turned at an angle of 45°, as indicated by the dash lines in the top view, the slant height would be the dash line AB in the front view. The slant height thus found would be the radius of the arc shown by the dash line in the development. Upon this arc the width of the base of each triangular face is set off, and the square base added.

Suggestions for the Pupils. — Study the views on the drawing-book page and see if you can read them. Study the patterns and see if you can tell how they are related to the views. Make a freehand sketch of the views of some model, and from the views develop the surface. What measures are common to the views and the surface development? In what other way can you prove that the surface is correctly developed? Prove your work. Study the space on the drawing-book page and make a new drawing of the views and surface already drawn to fill this space well. Complete the drawing, using the necessary conventions with much thought and care. Prove your work by making a paper pattern of the model and cutting and pasting it.

"Stout muscles and a sinewy heart,
A hardy frame, a hardier spirit;
King of two hands, he does his part
In every useful toil and art."

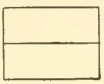
Additional Exercise. Plans. The House as a Home. — The evolution of the modern dwelling house is an interesting study, and although we have lost trace of many of the intermediate steps, it is easy to find enough of them to show that the development of a family home from a mere shelter has accompanied the growing needs of a family for a more beautiful home life.

One of the primitive forms of shelter was a simple tent. To a certain extent it answered the demand for protection from sun and storms, and provided for air, light, and heat.

The Indians made conical tents, called *tepees*, from the skins of animals. These had a hole in the top through which the smoke from the fire beneath could escape.

Soldiers use canvas tents for sleeping, cooking, and eating. The ordinary sleeping tents are called A tents from their form. These are but six feet in length, and the floor will accommodate two small mattresses placed side by side or one broad one.

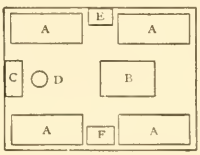
INDIAN TEPEE.



PLAN OF A TENT.

SOLDIER'S TENT.

The tents used for fishing and hunting parties for "camping out" in summer are usually larger, so that four cots or more are placed along the sides, leaving room in the centre which may be used for cooking and eating if necessary.



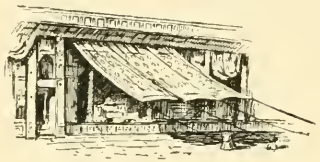
A, Cots. B, Table. C, Closet for dishes. D, Stove. E, Washstand. F, Trunk for clothing.

Tents have always been much used by wandering people, like the Gypsies, Indians, and Arabs, because they are so easily moved.

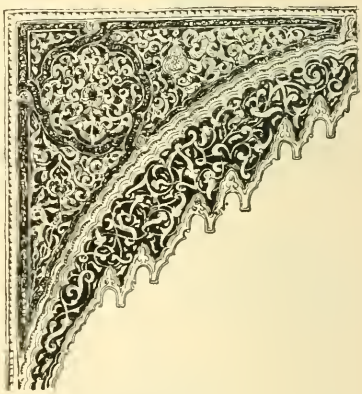
Longfellow speaks of the cares which

> "Fold their tents like the Arabs
> And as silently steal away."

The tents of the Bedouins and Arabs are their permanent homes, though they are moved from place to place, and they have made them beautiful by using coverings and interior hangings and screens of finely wrought, gorgeously colored stuffs. Saracenic architecture shows reminiscent traces of tent construction in the many hangings and canopies which adorn their palaces, and in the simulation of fringes and tapestry with which they decorated the spandrels of their arches. The illustration below is a spandrel from the Alhambra, the famous fortress built by the Moors in Spain, showing pendentives decorated with a profusion of ornament.



THRONE-ROOM AT TEHERAN.



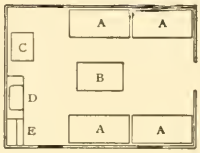
"The groves were God's first temples," and the delight and inspiration that came from worship in them made the camp meeting the event of the year for the country people of early times. From far and near the people gathered in some beautiful spot and pitched their tents for a season of prayer and praise. The desire to prolong the healthful, happy out-of-door life led to a change in the construction of the tent.

At first campers used the simple canvas tent, but for the sake of greater protection they soon began to build the sides of boards, stretching the cloth top over it for a roof. This gave them a door which could be locked, and windows which admitted light without rain or wind; the tent could be taken down and packed away when they wished. Afterward they made permanent roofs of boards, and left the tents, or cottages, as they had become, standing from one season to another.

Cottage City is the name given to the encampment ground at Martha's Vineyard, and it grew from the tent city which was the abiding place of the first campers there.

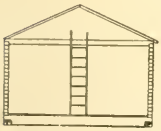
In mining, lumbering, and engineering camps, small portable houses are much used instead of tents. They are almost as easily moved and afford greater protection from cold weather and storms. These have doors, and windows which may or may not be glazed. The house is not much larger than a tent, and may be

taken to pieces and put together again easily. The interior arrangement would be very similar to that of the tent.

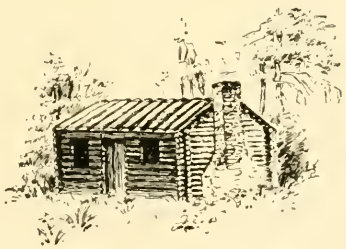


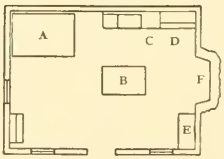
A, Cots. B, Table. C, Stove. D, Chest. E, Closet and shelves.

The houses built by early settlers in this country were much like this in arrangement, though logs were used in their construction before there were any saw-mills to make boards. The chimney, built outside of stones, gave a large fireplace inside, which furnished heat for comfort as well as for cooking.



SECTION.



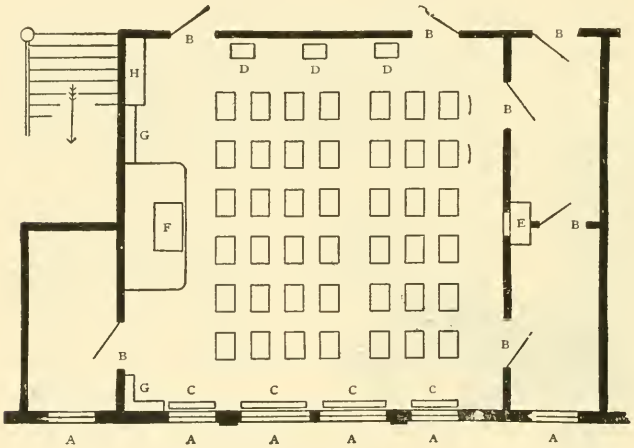


A, Bed. B, Table. C, Chest. D, Shelves. E, Cupboard. F, Fireplace.

All space was carefully utilized, and the top of the house was separated from the room below by a rough flooring, corresponding to our ceiling. Up in "the loft," as it was called, the older children slept, climbing a ladder to go to their beds beneath the roof. The loft was also a storeroom for dried apples, pumpkins, and all sorts of winter provisions.

At first the struggle to provide the necessities of life — food, shelter, and clothing — for their families, engrossed the energies of the colonists, but as time went on and they became more prosperous, the desire for a more beautiful home life changed the character of their houses. The larger families needed more room and more privacy, so the kitchen in which the cooking and eating were done was separated from the living room, and the loft was divided into rooms by partitions. The making of bricks and the building of saw-mills gave to the colonists their building material in better form, and they were soon able to construct houses which were

not so limited in size or in the number of the rooms. To add to the comfort and pleasure of the family the kitchen and dining room were separated, and an entrance, or "front entry" as it was called, was added. Instead of a ladder leading to the rooms above, a stairway was made, while there was a bedroom on the ground floor for the elderly people who could not climb the stairs easily. Other rooms and porches, verandas and bay windows, were added as they were needed, and "modern improvements" made according to the necessities and the means of the family, and the home became beautiful as well as comfortable.



A, Windows.
B, Doors. (The lines show which way they swing.)
C, Steam radiators.
D, Hot-air registers.
E, Ventilating shaft.
F, Teacher's desk.
G, Book-cases.
H, Cabinet.

Plans. — In planning a house or a room, provision must be made for air, light, and heat. These essentials should be secured with just as much beauty of proportion and arrangement as possible, under the conditions of the purpose for which the structure is intended.

If it is desired that the children should exercise their creative, constructive power, they might plan a tent or a one-room cottage for a summer outing, showing how air, light, and heat are to be secured, and where the necessary articles of furniture are to be placed. If preferred, a playhouse could be planned, or even so simple a thing as a dog-house; while some teachers may think it wise to confine this exercise to drawing the plan of the schoolroom.

The plan is the simplest way of showing the interior arrangement of a house or room, just as a map is the simplest way of showing the topography of a country.

"When we mean to build,
We first survey the plot, then draw the model."

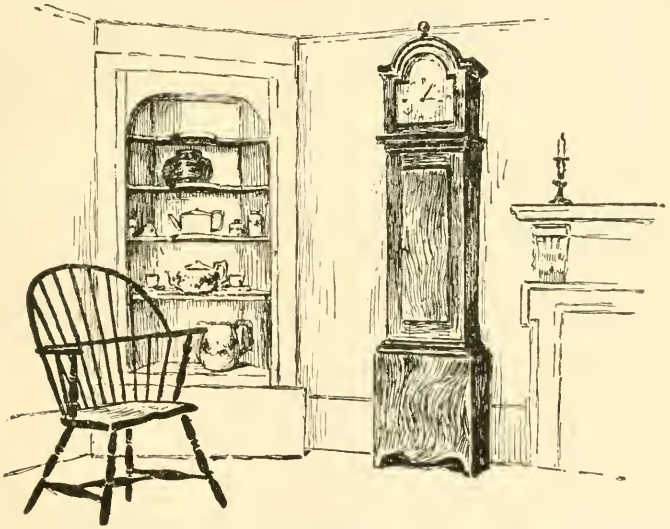
— SHAKESPEARE.

Perhaps the schoolroom itself or the cloak-room would afford the teacher the best means of teaching the children the conventional forms and technicalities employed in drawing a plan.

The illustration given of a plan of a schoolroom will show the teacher how windows, doors, chimneys, heating arrangements, etc., may be correctly indicated.

The thickness of the walls should be kept in proportion to the scale of the drawing.

If blue-prints or well-finished drawings of plans can be obtained, they will aid greatly in explaining difficult points, and in interesting pupils. Illustrations of plans and elevations may sometimes be found in magazines.



Suggestions to Pupils.— Have you ever seen plans of rooms and houses? Think what you would draw for the plan of this room, and draw it on the board. How would you get into the room? How can you indicate the doors? How do you get air and light in this room? You may indicate the windows and ventilators in your drawing. Show the heat radiators and registers.

You may think of a house with one room which you would like to have. It may be a summer-house, playhouse, or a camp.

Decide upon its size and shape, considering for what purpose it is to be used, and plan for its ventilation, light, and heat.

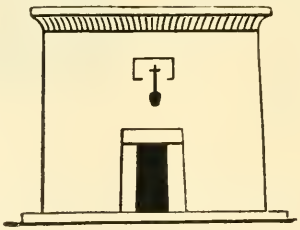
Draw the plan of such a house, showing where the necessary articles of furniture would be placed. Where would you cook, eat, wash dishes, sleep? What will be the most attractive part of the house?

Historic Buildings. — The study of the plans of historic buildings will be interesting to pupils in several ways. They will better appreciate the masterly skill of the ancient architects in grappling with their problems, as shown in the plans on page 9 of the drawing-book, when they have had experience in solving problems of their own.

The plan of Egyptian houses of the ordinary class was very simple; an illustration is given on page 133. An elevation of an Egyptian house is given below.

The early temple was nothing more than an enclosure or shelter for the image of the deity which was worshipped. This might be illustrated for pupils by building with square prisms or similar blocks. A prism standing on end would serve as the image of the deity placed on a pedestal, and a wall built around this, with an opening for a door, would show the beginning of the temple. Other enclosed areas or courts were added as they were needed, with rows of tall columns, which supported the roof, just as the columns do which are used in school halls or large schoolrooms, and in our churches.

The plans of the temple of Edfou and the Parthenon in the drawing-book should be compared with the illustrations, Book 7, page 16, and Book 8, page 16; Sixth Year Book, pages 16, 32, for the sake of understanding the floor plan, and associating the study of historic ornament with that of construction. The study of the plan of the Parthenon may be made most interesting by referring to Fergusson's work on architecture, which gives a description of the parts of this temple.



BOOK 8, PAGE 10 SIXTH YEAR BOOK, PAGE 26.

CONSTRUCTION.

OBJECTS. — Facts of Form. Conventions.
ART. — Working-drawings. Manner of Drawing.

[The pupil studies simple objects, thinking of the facts of form, and of beautiful form, expresses these facts by quick sketches, plans for the working-drawing of one of the objects on the drawing-book page and draws it in the book, using the correct conventions, and striving to show adaptation of the form of the object to the purpose for which it is intended, and to finish the drawing with the beauty of good placing, neatness and accuracy.]

Creative Work. — As a result of the study and making of working-drawings and patterns in the preceding chapters, the pupils will no doubt be able to work quite freely either from simple objects or from brief descriptions of simple objects called "problems." Possibly creative activity can be carried as far as the imagination of a new object, and the expression of this object in a working-drawing or a pattern. The illustrations given below suggest objects and modifications that might be attempted.

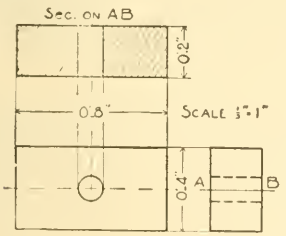


FIG. 1.

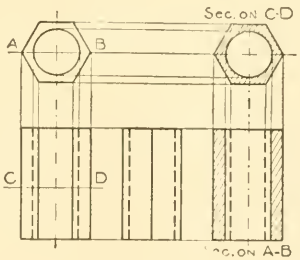


FIG. 2.

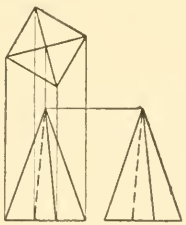


FIG. 3.

Suggestions for the Teacher. — If problem work is desired, lead the pupils to recall type forms and their working-drawings or patterns. Ask them to change one or more dimensions in one of these forms and to sketch the working-drawing or pattern of the modified form. Lead them to imagine further modifications, to state them, and to sketch them. In a similar way lead the pupils to imagine circular or square openings in these modified forms, and to sketch working-drawings to show what they have imagined.

Problems. — Write a problem similar to the following on the board, and ask the pupils to draw as directed in the problem: —

A block 5 in. × $6\frac{1}{2}$ in. × 8 in. is lying on one of its largest faces. Sketch the top, front, and left end views.

The results will necessarily differ, as pupils will very likely imagine the block to lie either with the $6\frac{1}{2}$- or the 8-inch side facing. This problem may be made more difficult by locating a circular opening in the block and by requiring a section view.

Here is another: A block 2 in. × 4 in. × 8 in. is lying on one of its narrow, oblong faces. A circular opening 1 in. in diameter is cut directly through the block from the centre of one of its large faces to the centre of the opposite face. Sketch the front and end views, and a top view of a horizontal section through the centre. The solution of this problem will be found in Fig. 1, on page 249.

"What were labor but for thought?
Baseless effort born of nought!"
— CHARLES MACKAY.

The Hollow Hexagonal Prism. — If a horizontal section is made, as indicated by CD in Fig. 2, it is best shown by a top view of the section, or sometimes by a bottom view. The section line AB in the top view indicates a vertical section. Imagine the model, — the hollow hexagonal prism, — standing before you in the position indicated by the views. Think of it as cut straight through from the line AB, in a vertical plane facing you. If the front half should be removed, you would have a front view of the section, as shown in the illustration.

Study of Beauty. — If some common household object is chosen for this exercise, it is quite probable that its form may be improved. The pupils should be encouraged to feel that they may make any desirable changes in proportion and outline, thus carrying the work into the designing of familiar and interesting objects.

Additional Exercise. — If views of a common object were chosen to be drawn on p. 10, some pupils may have drawn something which could be satisfactorily developed in paper or cardboard.

On the opposite page are given suggestive working-drawings. Figure 1 shows front, top, and end views of a trunk; Fig. 2, top and side views of a sled; Fig. 3, front and end views of a dumb-bell; Fig. 4, front and end views of a book-rack; Fig. 5, three views of a chair; Fig. 6, two views of a book-case; Fig. 7, two views of a table, with detail enlarged. Lead the pupils to realize that good proportion should always be considered in such drawings.

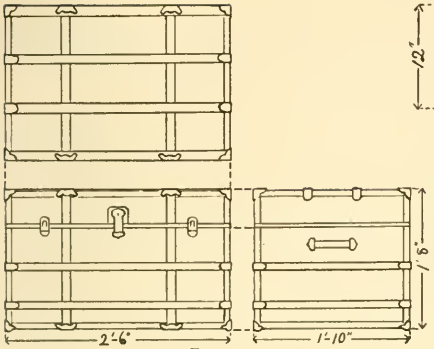


FIG. 1.

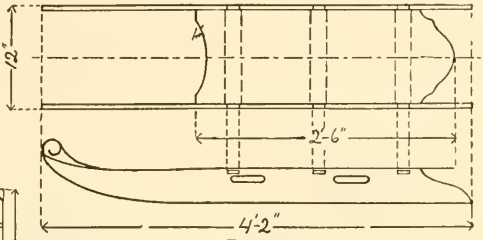


FIG. 2.

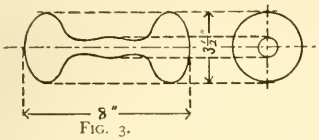
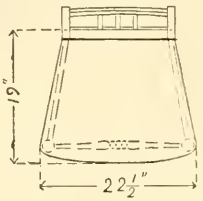


FIG. 3.



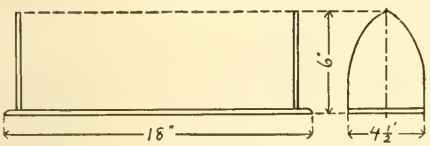


FIG. 4.

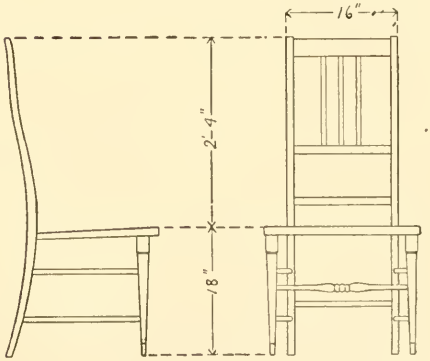


FIG. 5.

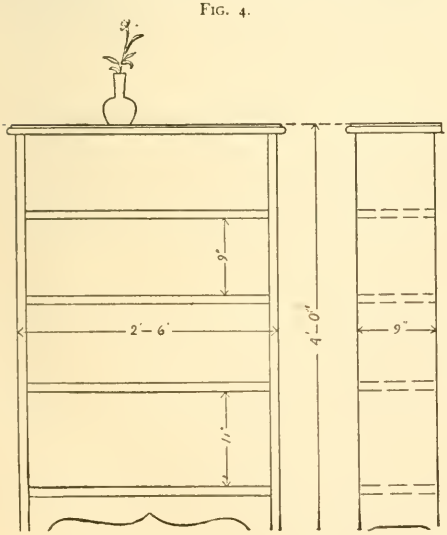


FIG 6.

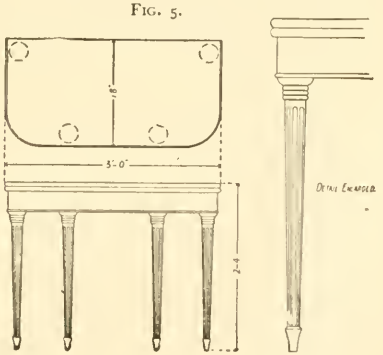
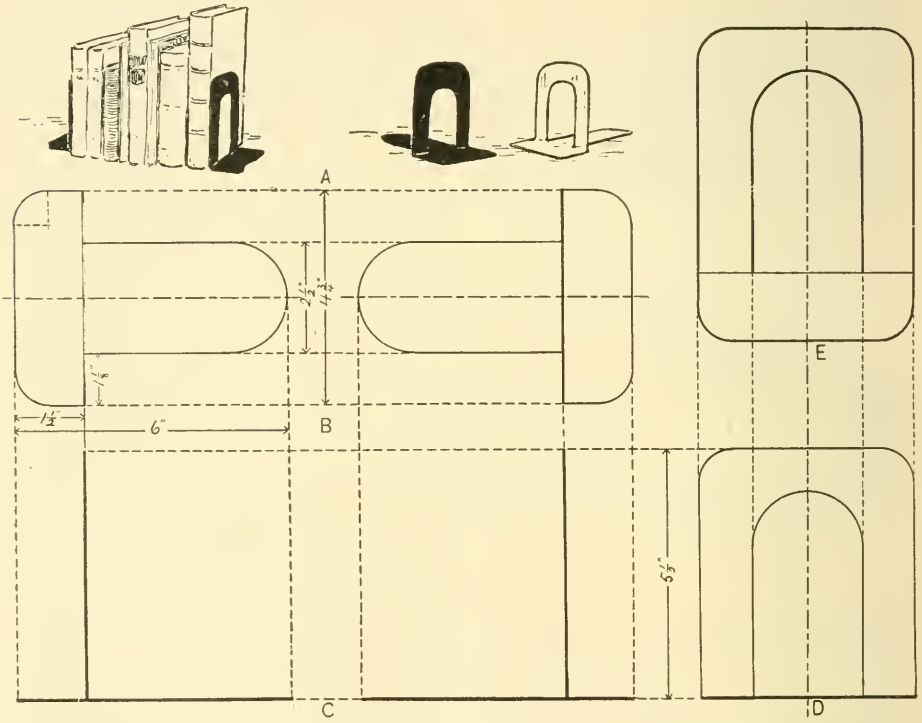


FIG. 7.

Objects Suggested.

The illustration given below shows a book support of heavy japanned tin. There are two parts, each cut in one piece and bent into shape. A cardboard or paper model of this would be a suitable exercise in surface development.



A, Appearance. B, Top view. C, Front view. D, End view. E, Surface development: one-half.

BOOK 8, PAGE 11. SIXTH YEAR BOOK, PAGE 27.

CONSTRUCTION.

EXAMPLES. — Designs for Brackets. Space Relations.
ART. — Elementary Design. Space Relations.

[The pupil studies the designs for brackets given on the drawing-book page, observing the beauty of the space relations, plans for a simple, strong, beautiful original design, makes sketches showing the design, considers the space on the drawing-book page, and draws the design in the book, with pencil or brush, seeking for beauty in the work.]

Creative Ability. — There are two forms of production, — one imitative, the other originative or creative. The creative faculty is based on the imitative, but is of a higher order, inasmuch as it reveals individual power. The imitative faculty leads to manufacture, the creative faculty to art. The methods of constructive drawing are purely imitative; but these methods furnish to the creative faculty in construction the basis for expression in constructive design.

Every human being possesses creative ability, and its development is one of the highest functions of education. Exercises calling for its use are, therefore, of great import. In undertaking an exercise in constructive design, the purpose of the object to be designed, its highest offices, and the possibilities for beauty in its form, should be carefully considered. Beauty in an object adapted to its purpose is the highest end of the creative faculty, — it is art.

Ornamental Iron Work. — The necessity for making fire-proof buildings has brought forward the use of iron in many forms, and especially in ornamental forms for stair-railings, grilles, panels, and elevator cars. The following quotation is from *Ornamental Iron*, for September, 1894, in which many suggestions concerning this work may be found: —

"In considering the part which ornamental iron work is to take in the plans of a building, it should always be borne in mind that iron yields a readier obedience to the touch of the skilled artisan than any other known material. . . . There is no design, whether expressed in lines or in washes, which cannot be reproduced in iron. . . . The metal will respond to the demand of the most imaginative, and the most poetic conception susceptible of materialization can be set forth in it."

The examples chosen for this drawing-book were taken, by permission, from the designs of The Winslow Brothers Company, and show some simple but effective work in wrought iron. Such work is more beautiful than the heavy, ornamental

iron casting, which was so common a few years ago, because, as it is chiefly hand-wrought, it shows more of the individuality of the artisan. The drawing-book examples, and the illustrations given below, show the varied forms and uses of the iron bar. Either cylindric or square bars are used for the upright supports and firm horizontals, which are the elements of strength in railings and window grilles.

The square bars may be twisted so that the straight edges run around the bar like the threads of a screw, to give variety to a design. Flat, ribbon-like bars may also receive this treatment with good effect. A cylindric wire is sometimes made into a spiral spring (Fig. 8), and used to give lightness and grace to a design.

Either flat, square, or cylindric bars may be forged into circles (Fig. 3), while the flat bars are particularly well adapted to the spiral and its modifications (Figs. 4–7). The fastening is often accomplished by rivets (Figs. 9 and 10) or ferrules (Fig. 11), which may be important features of the design, as they are in the examples given. Variation in the size and length of the bars is shown in the portion of a gate, Fig. 13, and the strengthening use of the S brace in the railing, Fig. 12.

A little study of the illustrations will show that the designs are made from the simple elements already mentioned, viz., the straight line, the circle, the spiral with a number of variations, the ferrules and rivets used for fastening, and some ornamentally wrought leaf forms used for finials.

With this simple material for his design, the artist's problem becomes one of so disposing these elements as to give the most pleasing arrangement of lines, and the most beautiful division of spaces. Beauty of line and beauty of space relations will be the final test of the value of the design. It should be remembered that these relations differ somewhat in an object designed for a support, like the bracket, from those in a design not intended for such a purpose. However free the movement of the design may be, the points of attachment must be strong, as suited to the purpose of the object. Always bear in mind that as in architecture, the constructive lines must be considered first, and the ornamentation second.

In a bracket, the triangle should never be lost to sight. The mathematical truth, "the square of the hypothenuse is equal to the sum of the squares of the other two sides," is the fundamental principle of strength.

While the triangle may be somewhat hidden, it should, nevertheless, be so apparent that the lines of strength are perfectly satisfactory to the eye and to all constructive principles.

The filling or scroll lines should bind together and help strengthen the triangle and give relief to the eye.

Examples of wrought-iron work may be found in the *Architectural Record*, the *Architectural Review*, and in the *Brochure Series of Architectural Illustration*.

Suggestions for Pupils. — Notice the triangular shape of the brackets on page 11. What line represents the supporting member in each of these? In the shelf bracket the vertical and horizontal lines of the bracket are given, as well as the line of the shelf and of the wall. In the electric lamp bracket where do you find the vertical and the horizontal lines?

Notice that the spiral curves just touch the vertical, horizontal, and oblique lines of the bracket, thus strengthening the brace, as well as giving a beautiful arrangement of lines. The ferrules, which clasp and hold the parts together, add to the beauty of the design.

If it had been desirable to have the light farther away from the wall, what change would that have made in the proportion of the bracket?

Sketch one of these brackets, enlarged. Design a bracket, studying to make it both strong and beautiful. Let this be a bracket for some particular purpose. It may be to support a shelf, a projecting window, a lamp, or a swinging sign. Study the space on the drawing-book page. Redraw your design in a size suitable for this space. Finish the design with brush and ink, or with the pencil.

Additional Exercises. — Let the pupils seek out and discuss designs in ornamental iron. These designs may often be found in current magazines. Encourage the pupils to design not only brackets, but simple grilles and hinges.

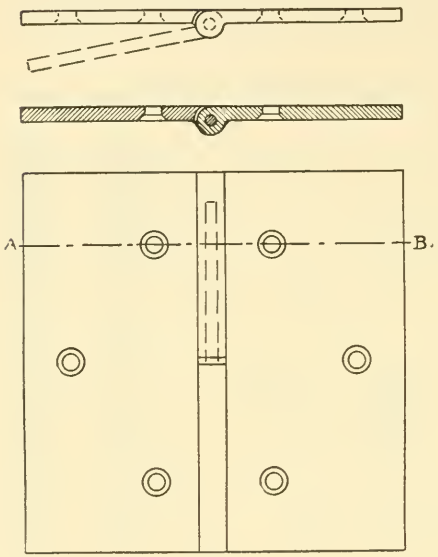


Fig. 1.

Give a definite purpose to such design; for example, a hinge for the doors of a cabinet in the parlor, or a hinge for a glove box.

The long T hinge in the illustration below is quite in keeping with a plain substantial door, and adds much to its appearance.

A working-drawing of a common butt hinge for a door is given at the left, showing the front view, a section made at AB, and a top view. In the top view, the movement of the *leaves* is indicated. The essential parts of a hinge are the *leaves* or *straps*, the *pin* on which the leaves turn, and the *knuckle*, or round portions in which the pin turns.

Fig. 2.

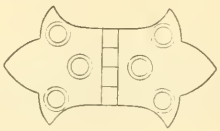


Fig. 3.

Fig. 4.

An illustration is also given of a small strap hinge, Fig. 2, which would be good for a glove box. Fig. 3 is a butt hinge which would also be suitable for a box. Fig. 4 is the long strap of a T hinge which might be appropriately used on the door of a plain oak cabinet or writing-desk, as well as on a house door.

BOOK 8, PAGE 12. SIXTH YEAR BOOK, PAGE 28.

REPRESENTATION.

NATURE.— Spring Flowers. Life and Growth.

ART.— Selection. Composition. Choice of Aspect. Rendering.

[The pupil selects and arranges two or three flowers, seeking for good composition, and sketches them, chooses and studies the most beautiful aspect, and draws the arrangement in the book, seeking for beauty in relationship and in rendering.]

Plant Growth. — The most welcome of all the year are the spring flowers. Often the pupils bring them to school, and in the cities it is possible, through "permits," to obtain sprays, and even flowers, from the parks for educational purposes. It would be well to suggest rather large flowers for this purpose. The dogwood blossom, the magnolia, the dandelion, the fleur-de-lis, and jack-in-the-pulpit are satisfactory.

Choice of Aspect and Arrangement. — Whatever flower is studied, let the page be considered in reference to the subject, and the subject in reference to the space. A graceful arrangement is easily made through thoughtful observation and studying space relations; thus the pupil may do more than reproduce what he sees when he adds the result of the best arrangement of what he sees. For this reason it is well to have flowers liberally distributed through the room, that the pupils may have some choice. Do not let them sit too near the flowers, as it is desirable to keep the effects simple and without many details.

Study of Illustration. — In drawing-book 8, page 12; Sixth Year Book, page 28, notice the breadth of treatment in the jonquil, for one must observe what it is best to leave out as well as put in, — this

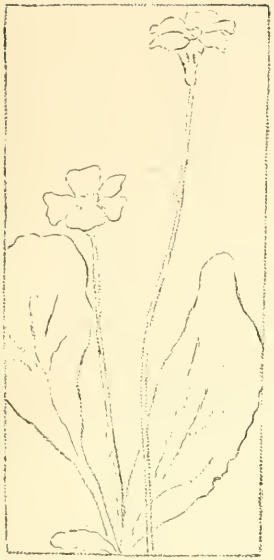
being the art in drawing. Observe the direct, energetic stem contrasting well with the graceful curve where the flower meets the stem. The leaves show some color, but only in a few places are there very strong darks.

Values. — After the drawing is well started, talk a little of "values," or (as shown in this example) the relation of one tone to another. If the pupils are inclined to force the tones immediately to black, place a bit of dark green or black cloth beside the leaves and flowers, and let them see the difference. In outline drawing, values may be shown by the strength and delicacy of the lines, that is to say, the production of values would here refer to that treatment where the important part or parts are strengthened and others kept subordinate by weaker lines. The side that expresses shadow may be darkened, for that is really the beginning of the study of values. If the lines are uniform throughout, a drawing appears flat and perhaps inclined to be decorative in effect, while gradation or change in the color or strength of line will produce a pictorial effect. The flowers on the drawing-book page are not placed far apart, and the difference in values is not great.

Pupils' Work. — As the pupils proceed, it is well to have them place their drawings some distance from them occasionally, to study and compare. Faithful effort should be respected, no matter how poor the results. We should *grow* technique, not force it.

"Now the bright crocus flames, and now
The slim narcissus takes the rain,
And straying o'er the mountain's brow,
The daffodils bud again."

— ANDREW LANG.



Reproduction in Miniature of Work of Pupils in the Sixth Year.

DECORATION.

BOOK 8, PAGE 13. SIXTH YEAR BOOK, PAGE 29

EXAMPLES. — Decorative Design. Space Relations. Flower Form.
ART. — Appreciation. Selection. Composition. Light and Dark.

[Lead the pupils to study the examples of decorative design on the drawing-book page, thinking of them as designed from flower forms, and observing the beauty of the space relations; to study and arrange flower forms, thinking of the decorative effect produced; to plan for a simple decorative design of their own composition, and to make sketches showing the design; to draw the design in the books, considering a good balance of light and dark, and seeking for beauty of effect.]

Study of Examples. — From study of the examples in Drawing-book 8, pages 12 and 13; Sixth Year Book, pages 28 and 29, it will be seen that the same flower has been selected in each case. Lead the pupils to tell you that on the left-hand page the real flower has been drawn as it appeared, making a pictorial drawing, while on the right-hand page the flower outline has been used as a decorative arrangement for a certain space. Each method of treatment has its important place in artistic expression. In the latter a good balance of light and dark — a pleasing space composition — is more important than the flower used, although the well-drawn outline of the flower is an important element of beauty. The principles of composition leading to fine space division can be studied in all the illustrative pages, and especially in Book 1, pages 2 and 15; Book 2, — Third Year Book, page 18; Book 3, page 15; Book 4, page 16; — Fourth Year Book, page 32; Book 5, page 16; Book 7, page 15.

Call attention to the use of three tones in the upper illustration on the right-hand page, also to the good drawing of the stems and leaves, showing the strong direct growth.

Preparation for the Lesson. — The pupils have drawn a flower on the left-hand page; and this, if a good and simple selection, may be used as the decorative

motive on the right-hand page. Any simple spring flower may be selected, being careful that the flower is not too small. The narcissus, fleur-de-lis, tulip, and dogwood can be usually obtained in the spring. If it seem necessary to use small flowers or grasses in this way, they should be little more than outline drawings, leaving out all detail. The result to be obtained is not an illustration of flowers alone, but a beautiful composition. This is shown in a pleasing effect, first as a whole, then as to the balance of parts and the distribution of light and dark.

Ask the pupils if they can tell you what a real artist is. Lead them to the thought that "an artist is one who creates beauty." If they would make their work artistic, they must make it beautiful, putting their best thought and effort into it. The art will come if they make beautiful lines and choose beautiful proportions. The illustration on page 259 is a reproduction of work by a pupil in the sixth year of school, in water-color.

Suggestions to Pupils. — Plan the size and proportion of the oblong for the drawing-book page; sketch this in lightly, and then plan the arrangement of the flower forms. Try to draw lines beautiful in direction and in fitness to the subject, showing the strength and directness of the growth. If the round Japanese brush is used in the drawing, there is a special opportunity to show individuality. The brush should be filled full of ink, using the point, drawing with the brush upright. This may be carried out with ink in flat wash, as indicated in the drawing-book, or with pencil line and pencil painting.

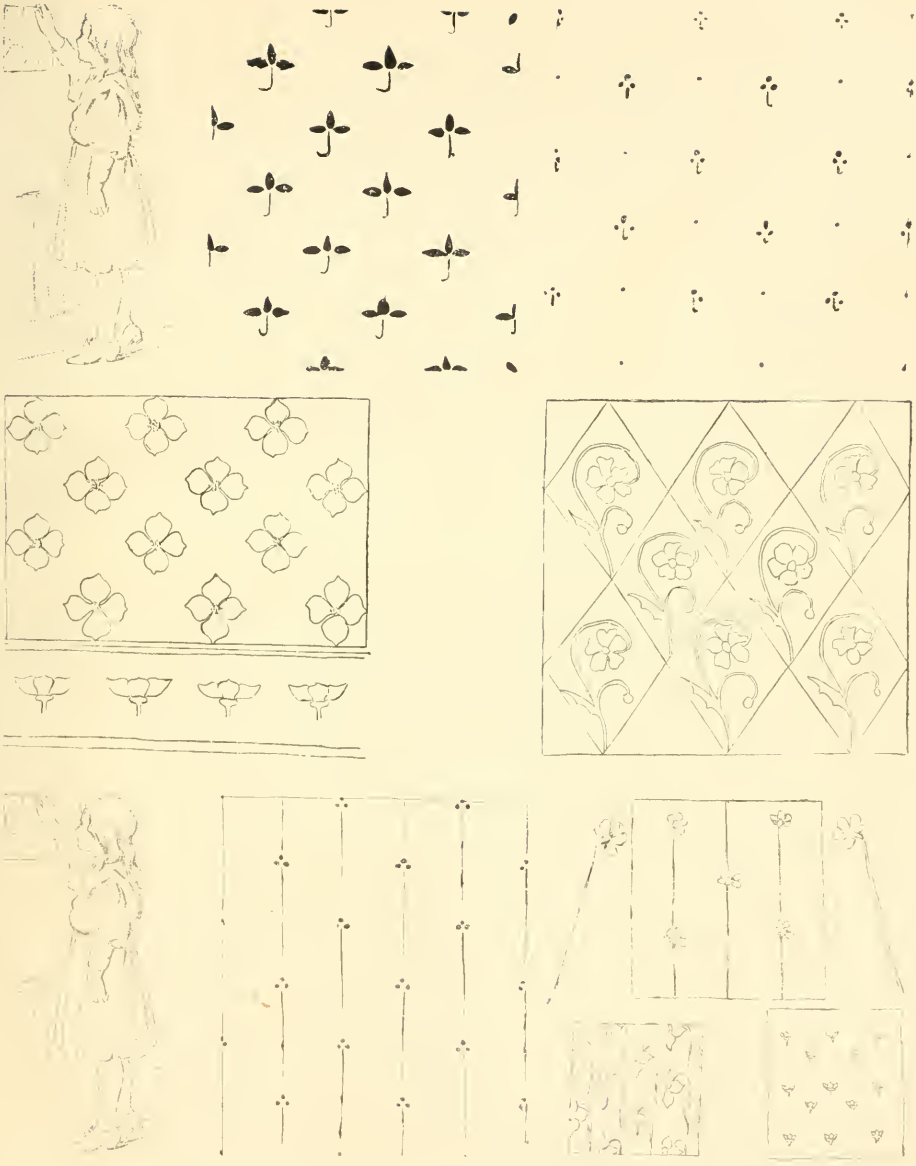
Suggestions to the Teacher. — It is not necessary in this case that the flower should be in the hands of the children. A flower that they have previously studied may be selected, and, perhaps, a large drawing placed upon the board. The pupils should decide upon the shape of the composition.

In criticising this work with the pupils, quality of line, fine spacing, and originality of treatment should be considered; and, when carried out in two or three tones, the balance of light and dark should be considered. Plate XIX.

If possible, time should be taken to place the drawing-books where the pupils can all see them, — along the ledge of the blackboard, perhaps, — for criticism and comparison.

"The Claims of Decorative Art," by Walter Crane, is a good book for the teacher to read in this connection; also, "Composition," by Arthur W. Dow.

Added Interest. — Such compositions may be used as head- or tail-pieces, and as decorations of book covers, etc. This exercise may be supplemented by making designs for surface coverings — for simple prints, as illustrated on Plate XX. for higher grade textiles, for wall-paper, or for other decorative purposes.



A Page of Designs by Pupils of the Sixth Year

BOOK 8, PAGE 14. SIXTH YEAR BOOK, PAGE 30.

REPRESENTATION.

NATURE. — Landscape.

ART. — Elementary Composition. Reading.

[Lead the pupils to study and to make sketches of a simple landscape, observing the relations of space and line, expressing essential features, omitting detail; to draw in the books, planning for good space composition, and seeking for beauty of effect.]

Study of Landscape. — Training is as necessary to the appreciation of the beautiful in landscape as it is to the appreciation of beauty in literature, though at present, examples of good landscape are not as accessible for schoolroom study.

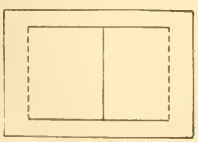
For this page it would be best to make preliminary sketches or studies from nature. If the school building commands fine views, the class might go to the windows, or into the school yard, selecting small bits that seem to compose well as pictures. In a city, a neighboring park might be visited, or in the country a "field day" arranged for, and part of the time given to botany or science work, and part to sketching.

Selection. — The pupils should consider their outdoor sketching as serious work; they should concentrate both attention and effort on the work at hand, and all should be as quiet as when in the schoolroom. A bit of stone wall, a gateway, a clump of trees reflected in the water, part of an old wharf or building, a boat by the shore, — all are good subjects. Avoid too ambitious efforts or distinctly panoramic effects. The pupils are learning to draw, as well as to compose and render with artistic feeling, and selection of subject is as important as selection of aspect.

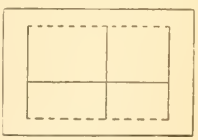
Composition. — A leading artist says that before making an outdoor sketch he takes different positions, drawing a few leading lines upon bits of paper, finally selecting the one which seems to promise the best composition.

A good rule to observe is to have a leading point of interest and a secondary one, the latter usually leading the eye out of the picture.

The use of a "finder" is suggested to aid the pupils in selecting a good composition, a bit of paper 4×5 with an oblong opening — say $1'' \times 3''$, not less.



Looking through this will suggest relation and placing in composition as well as in selection of good point of view. "Finders" of different shapes and cut with more than one opening, as shown in the accompanying illustrations may be used. These are to be cut on the inner full lines and folded back on the dotted lines; the first has two openings, the second four.



The Japanese landscape (Book 8, page 2; Sixth Year Book, page 18), the studies of La Farge, and the landscapes of Rembrandt (Book 8, page 15; Sixth Year Book, page 31) show a variety in composition and in treatment. There are also landscape studies shown in Book 3, pages 6 and 16; Book 4, pages 2, 15, 16; Fourth Year Book, pages 18, 31, 32; Book 5, pages 15, 16; Book 6, pages 2, 15, 16; Fifth Year Book, pages 18, 31, 32; Book 7, page 1.

"First you compose: a line's grand sweep,
A break, a blend, a guide for our eyes.
You've a tone to settle, a curve to keep,
An impression to catch, new tints to match;
And a lesson behind it surely lies."

— J. K. STEPHEN.

Translation from Another Medium. — If season or weather make outdoor sketching impossible, let the pupils translate a photograph or drawing from a magazine for this page. Call attention to the fact that a photograph is often a literal copy of nature, while their sketches may be interpretations; also, that magazine reproductions are usually reduced from a much larger scale. Lead the pupils to make a collection of such examples to be kept in the schoolroom. These should be simple in character with certain leading characteristics. They should be selected with reference to simplicity of space divisions, and also as to simplicity of tone values. Many of the landscape illustrations published are not good in composition. The same general principles apply in selecting a good landscape composition that apply in a good group.

These examples might also be used with a "finder" to good advantage, selection being made from an illustration of a little better composition by leaving out some portion, making the horizon line higher or lower, or cutting off at the right or left as shown.

Illustrations. — The illustrations on page 165 are variations of the same composition by means of *notan*, or opposition of light and dark. This is not intended to represent the light and shade, or the real appearance of the landscape, but is simply a variation to obtain a beautiful result. Such a treatment of landscape has its value on the art side, although it does not take the place of the frankly pictorial work.

The illustrations on Plate XXI. show a photograph from nature and the various selections that may be made from it by using a "finder" and seeking for parts that are agreeably composed. How different these selections are in character, some giving sunshine, some shadow, some suggesting companionship, and some seclusion!

Landscape and Selections from It

Suggestions for the Pupils. — In carrying out this exercise, study the landscape, not for the effect of light and shade or color, but try to show such a distribution of hill, and sky, and water, trees and buildings (as the case may be), as will make a good space composition. In drawing trees do not draw details of branches, but express in the simplest way the space a tree occupies in the landscape by giving the outline of the mass of the tree. A suggestion of branches may be added, if necessary, to give strength to the composition.

After the preliminary sketching from nature or photograph, an original composition can be placed on the drawing-book page; after lightly sketching in the space divisions with pencil, the composition may be finished, as the teacher decides, either in pencil, ink outline with brush, ink in light and shade, or in color with flat wash.

If the pupils are familiar with the use of flat wash in water-color, they might carry out the whole composition in one color; for instance, in tones of yellow. As an example, take the "River Charles," by Longfellow, given below, carrying out the sky and water in the lighter tones, the meadows in a deeper tone, and the "shadowy woodlands" still darker. Or it could be carried out with blue water and sky — not too deep — with green meadows and deeper green trees.

"River that in silence windest
Through the meadows, bright and free,
Till at length thy rest thou findest
In the bosom of the sea!

* * * * * * *

"Not for this alone I love thee,
Nor because thy waves of blue
From celestial seas above thee
Take their own celestial hue.

"Where yon shadowy woodlands hide thee,
And thy waters disappear,
Friends I love have dwelt beside thee,
And have made thy margin dear."

Added Interest. — Besides photographs and reproductions in books and magazines, literature abounds in beautiful landscape pictures. R. L. Stevenson was especially fond of painting word pictures of simple and beautiful landscapes, and our greater American poets were all appreciative of the beauties of landscape.

Here is a simple landscape composition from Emerson: —

"The wide lake, edged with sand and grass,
Was burnished to a floor of glass,
Painted with shadows green and proud
Of the tree and of the cloud."

— Ralph Waldo Emerson.

BOOK 8, PAGE 15. SIXTH YEAR BOOK, PAGE 31.

ILLUSTRATIVE PAGES.

LANDSCAPE. — La Farge. Rembrandt.

Illustrations. — The simplicity of the first sketch by La Farge is noticeable, — but how much the few lines tell! It is not much more than an outline drawing, but full of character. The tree was evidently his chief thought, and then the great stone at its foot — a resting place to look off from the little hill to the distance beyond. The composition should be studied.

The "Study of Values" is equally suggestive in the rendering of color by light and dark. It is evident that the artist did not care for details at all, but was struck with the opportunity afforded for a study of different tone values in light and dark, varying from absolute light to deepest shade. What he wished to show was simply degrees of grayness down to black. A sketch of Mr. La Farge and his work is given on pages 87–89.

The Rembrandts show great repose. The touch is clear and strong, and the expression of distance is very remarkable. There are no pictures that grow upon one more than those of Rembrandt. Study either of these, but especially the lower one, and see how the distance stretches out and out, and how new things appear. In the matter of composition these two landscapes are very fine. Mark the very simple, well-balanced divisions of space in the other — see in the lower the high, more unbroken mass at the left, balanced by the low, level, and diversified space at the right.

Rembrandt Van Ryn (1607–1669) was born at Leyden, Holland. His parents were in comfortable circumstances. According to an old chronicler who wrote an account of Rembrandt's life, "They sent him to school to learn the Latin tongue, to prepare himself for the Academy of Leyden, that when he became of age he might serve the city and the republic with his knowledge"; but "he had no liking nor desire for his studies, because his natural inclinations drew him on to the art of painting and designing." He was sent, therefore, at the age of twelve, to a studio to follow this inclination. When about seventeen he began to observe for himself landscapes and outdoor aspects, men and women. As he progressed he painted portraits and pictures; he drew with the pencil and pen, and etched and engraved; he is called the "prince of etchers." He also received pupils, who came to him eager for instruction. His first etching in 1628 portrayed his mother, and was a strong piece of work.

As works of La Farge and Rembrandt are given together here, it will be of special interest to know La Farge's estimation of Rembrandt. In his "Considerations on Painting" he says: —

"The black etched line of Rembrandt will give me a far spreading horizon, not in the direction of his line, but running to it. A few scratches of his will make the earth sink or rise, remain solid, or be covered with water — no longer, in fact, be ink and paper, but light and air and shadow and varying form."

And, in his "Artist's Letters from Japan," he further says: —

"It will then be in what we call drawing — which is an abstraction, the synopsis of the outlines of things meeting together, of their relative intensities, of their own colors, of their relations to the place they are in, that is to say the picture — that this art of Japan, the daughter of the art of China, will attain its highest form; so that in reality those of us who think of it as appearing at its best only in color, in external charm, have not understood it. An etching of Rembrandt could fairly be said to represent, not so much in itself, but in its essence, what a great Chinaman would have liked to do in India ink — the material of all others which, even to us, is his especially. The line, the abstract line of Rembrandt, its elegance, its beautiful patterning of the surface, is concealed to us by the extraordinary richness of some of his modeling and the extreme gradations of what we call light and shade. But it is there all the same, as a geologic foundation, in the same way that inside of the Titian's splendor of surface there is a decorative substructure as well balanced and fixed as a Venetian brocade — just as the works of other great colorists, as we call them (to designate more complex men), imply, in their constitution and the mechanism of their technique, powers of design and drawing sufficient to furnish our armies of such draftsmen as flourish, for instance, in the Paris of to-day."

Rembrandt's greatest painting was "The Night Watch," and his greatest etching "Jesus Healing the Sick," more commonly known as the Hundred Florin piece. He produced very remarkable effects by his concentration of light, thus making strong, but never harsh, contrasts of high light and deep shadow. His work was remarkable for its wide range of subject, wealth of imagination, and poetic creative power.

For an account of the life and works of mediæval and of modern artists, the following will be found helpful: —

History of Painting. Alfred Woltmann and Carl Woermann. Two volumes.
History of Modern Painting. Richard Müther. Three volumes.

These two works are large octavos; they are the result of great research, and should be on the shelves of every public library that has art books for reference.

BOOK 8, PAGE 16. SIXTH YEAR BOOK, PAGE 32.

ILLUSTRATIVE PAGES.

GREEK ART. — Sculpture, Painting, and Architecture.

Illustrations. — The examples chosen give some idea of the great beauty of Greek art in architecture, painting, and sculpture.

The picture of the Acropolis shows how the Greeks massed their most beautiful buildings on an eminence. The Parthenon can be plainly seen; at its left can be seen traces of the Temple of Erechtheus, and lower down at the left can be seen the Temple of Nike, and the Propylæa, which marked the entrance to the Acropolis.

The Parthenon itself, shown in the illustration at the right, is still very beautiful, though in ruins. The complete form of a Greek temple is shown in the Temple of Theseus at the lower left part of the page. At the right is given the celebrated Caryatid Porch, the roof of which is supported by sculptured figures; it is a part of the Temple of Erechtheus. The examples of architecture are more fully described on pages 191–198.

An exquisite bas-relief from a Greek tombstone or stele, as it was called, is also shown and below it one of the wonderful Greek vases, ornamented with painted figures, is given. The stele attracts by its fine figures and drapery as well as by its composition. The vase is very beautiful in its space divisions, its curvature, and proportion as well as in the spirited figure drawing.

The background of the Greek steles was frequently filled in with blue or some other strong color. The garments were commonly tinted, and frequently borders were painted to represent embroidery. The sculpture on the steles quite often represented the daily occupation of the person or persons whom it commemorated.

Percy Gardner, in his "Sculptured tombs of Hellas," thus describes the stele shown on the drawing-book page: —

"Hegesos, daughter of Proxenus, is seated at the left, on a chair which is admirably shaped alike for comfort and steadiness. Her hair is bound with a beautifully arranged kerchief; she wears the fine Ionic chiton, with sleeves and an overdress. She is looking at a necklace which she has drawn from a box held by a serving girl, and which she holds in both hands. This necklace must have been represented either by help of color or metal. The slave's more simple dress contrasts with the elegance of that of her mistress. The work seems to belong to the early part of the fourth century. This monument is not in the Museum of Athens, but remains in its place in the cemetery by the gate."

NIGHT ON THE ACROPOLIS.

"Athens is Greece; and where is Athens' heart,
That throbs immortal, if it be not here?
The very dust is sacred, being a part
Of her great bosom. Every chiseled stone,
Each base, each arch, each pillar, placed or prone,
To those who bow at Freedom's shrine is dear.
Not less do they revere
This mighty rock who hold to Beauty's worth
In fusing thoughts of higher, grander things
Into the baser minds of earth;
For here, with heaven-plumed wings,
Had Love of Beauty birth.

* * * * * * * *

"Behold, behold,
How, with imperious majesty of might,
Against the vast, moon-flooded wall of night,
The shattered shafts that were the Parthenon
Loom large upon the sight!

* * * * * * * *

"We may not linger till the night wax old,
But, ere we turn to go,
Shall we not greet clear Hesper rising slow
Above Hymettus, looming black and bold?

* * * * * * * *

"Reach out, O yearning soul, be drenched in light!
Melt into, mingle with, the soul of night!
This is thy Greece; thy dearest dream is won;
Thou standest on thy hope's supremest height,
Within the shadow of thy Parthenon!"

—CLINTON SCOLLARD.

APPENDIX.

THEORETIC PERSPECTIVE.

FORMERLY object drawing was taught by first giving a course in theoretic perspective. This was done that the student might have certain fixed principles and diagrammatic formulæ by which he might be guided in object drawing, and by which he might correct his errors. It became apparent, however, as this method was continued, that a student might be admirably grounded in theoretic principles, diagrams, and problems, and yet be quite unable to see or to draw the appearance of an object. This is only another example of the educational contest, words *versus* things.

Therefore, methods in object drawing have been changed. Object drawing now begins first by memory or imagination drawing, then by a study of the appearance of the

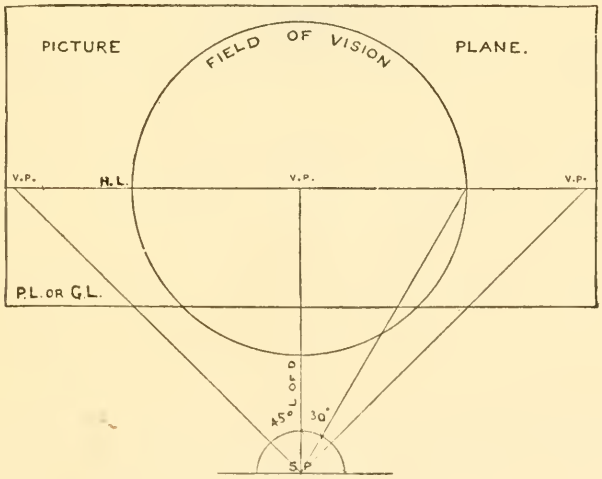


FIG. 1. — PERSPECTIVE DIAGRAM.

object. From that study, pupils are led to deduce certain general principles which govern the appearance of objects in different positions.

It is well, however, that teachers should know something of theoretic perspective so

as to meet any questions that may be raised by the advocates of the old method of teaching, as well as to understand something of what is a very interesting science.

A drawing made according to theoretic perspective is the representation of an object or scene as if seen through, and therefore upon, a pane of glass. It is necessary, then, to imagine a plane (which takes the place of a pane of glass) called the Transparent Plane, the Plane of Delineation, the Vertical Plane, or most generally the Picture Plane (P. P.). The flat surface of paper upon which a perspective drawing is made represents this plane.

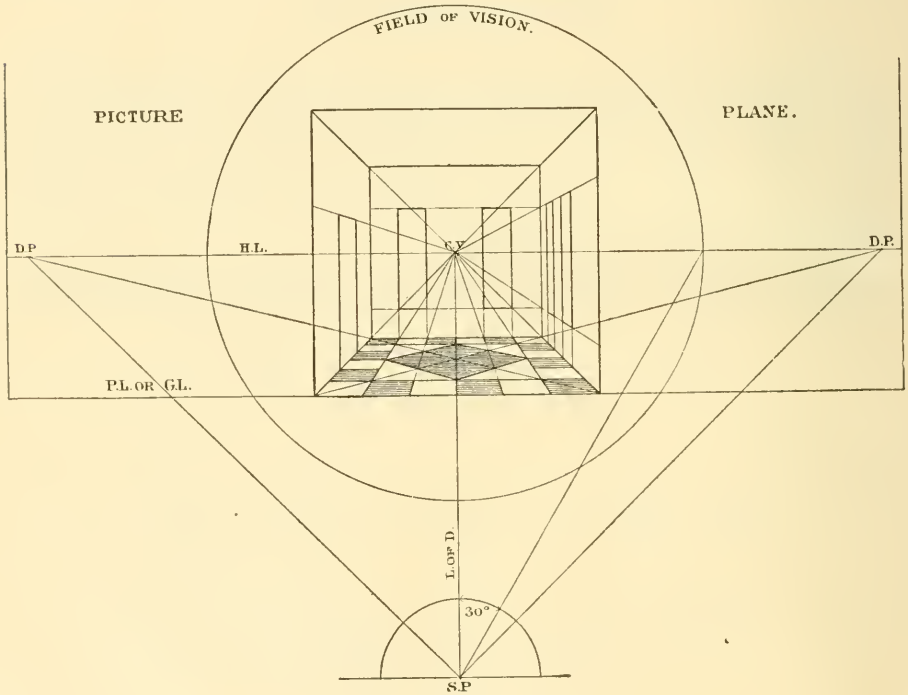


FIG. 2.

The eye of the observer is supposed to be fixed and immovable at a point called the station point (S. P.), looking along an imaginary straight line called the Line of Direction (L. of D.) to a point called the Centre of Vision (C. V.), which is directly opposite and on a level with the eye, and the Vanishing Point (V. P.) of all lines at right angles to the Picture Plane. The line at the level of the eye is sometimes called the Line of the Horizon (L. H. or H. L.).

The L. of D. indicates the direction in which the spectator is looking. Its proportionate length is according to the distance of the spectator from the P. P. The Picture

Line (P. L.), or Ground Line (G. L.), is the lower edge of the P. P. The Field of Vision embraces what the eye, when fixed in one position, sees within a visual angle of about 60°. Vanishing Points are points to which parallel lines or edges, retreating from the eye, appear to converge.

All lines which, in the object or scene to be represented in perspective, are at right angles to the P. P., vanish in the C. of V. All lines parallel in the object and at angles other than 90° to the P. P. converge to or vanish in Vanishing Points at the left and right of the C. V. Measuring Points (M. P.) are points upon the P. P. by use of which apparent or perspective distances are measured. See Fig. 5.

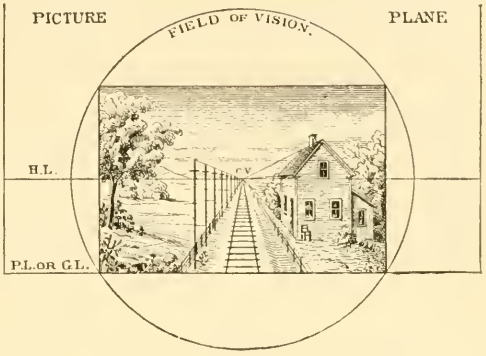


FIG. 3.

Convergence of lines, the apparent decrease in length of equal lines according to distance, and the increased foreshortening of distances as they retreat or recede from the eye, can be readily illustrated by a railroad track.

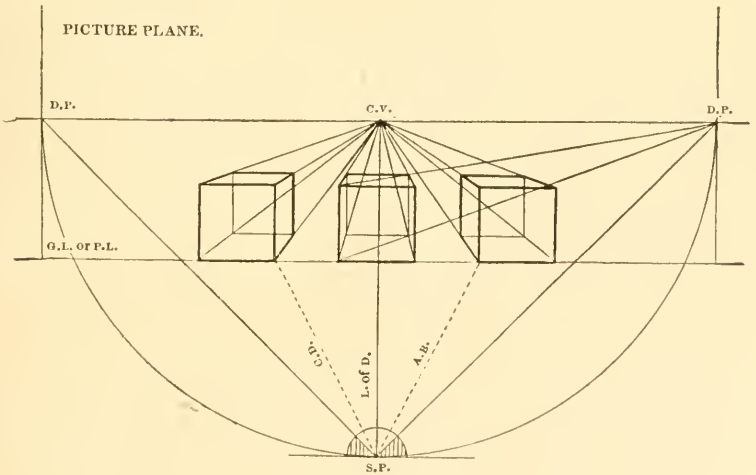


FIG. 4.

Theoretic perspective embraces parallel perspective, angular perspective, and oblique perspective. In parallel perspective, the object *stands* parallel to the Picture Plane, Figs. 2, 3, 4; in angular perspective, the object *stands* at an angle (other than 90°) to

the Picture Plane, Fig. 5; in oblique perspective, the object rests on one of its edges or corners, so that in the case of a rectangular object all of its faces are oblique to the picture plane.

Parallel perspective is little used in present construction, as it gives so many distorted effects. It is not countenanced by good artists, except under special conditions of relationship of objects. The illustration, Fig. 4, shows a row of three cubes in parallel perspective; the one in the middle is a representation of the appearance of a cube in front of and below the eye; those at either side can be called approximately correct, only when considered in relationship to the middle cube or to each other. If a cube should be placed *alone* at the left or right of the eye, it would, according to *parallel perspective*, be drawn as in the illustration. Theoretically this is correct, because based on the supposition that the picture plane is fixed; but in model and object drawing, this is

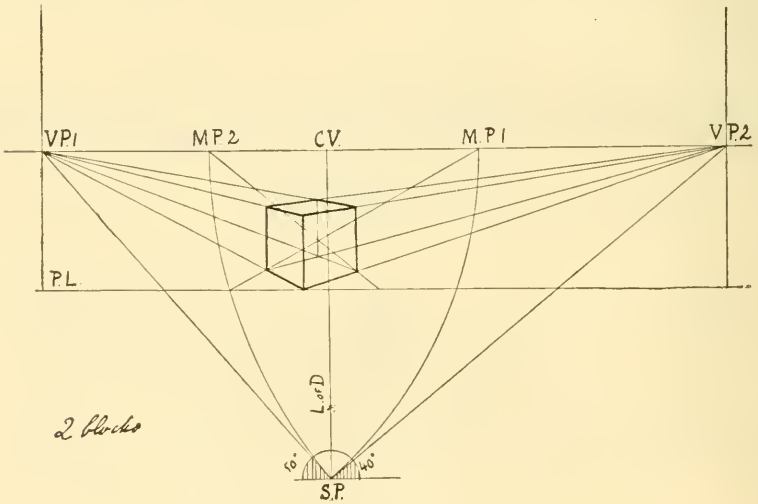


Fig. 5.

wrong. For in model and object drawing, the conditions of theoretic perspective, that the eye and the Picture Plane are arbitrarily fixed when a single object or several unrelated objects are to be drawn, cannot be accepted. In model drawing, when a cube or other object is observed *alone, at the left or right of the eye*, it becomes the direct object of observation; and the eye is directed toward it along a Line of Direction, AB or CD, decidedly different from the L. of D. shown in Fig. 4. The imaginary Picture Plane must always be at right angles to the Line of Direction; hence, whenever the Line of Direction is changed, the Picture Plane is also changed. Consequently, when a cube at the left or right of the eye is observed alone, the Picture Plane is in quite a different

position with relation to the cube from that assumed in the first instance, as shown in Fig. 4. The cube observed alone appears in angular perspective; the drawing will follow the general rules of angular perspective, as illustrated in Fig. 5.

From a lack of understanding of this change of the Picture Plane, many mistakes are made in illustrations in books and newspapers, by draughtsmen, who know only the rules and diagrams of parallel perspective. A *facsimile* of such an illustration is given in Fig. 6. These illustrations are, of course, broadcast, and the people have become familiarized with the error and accept it as truth. Unfortunately it has crept into school text-books also, and the pupils are constantly receiving false impressions. It is especially necessary, therefore, that teachers should have the truth clearly in mind and should confirm the statements in the preceding paragraph by their own observations of the appearance of single objects.

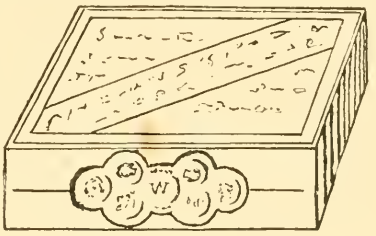


FIG. 6. — INCORRECT DRAWING.

Those teachers who are interested to look farther into the matter of theoretic perspective will find general statements, explanation of terms, illustrations, illustrative diagrams, and exercises in Drawing-Books Nos. 13 and 14 of *The American Text-Books of Art Education*, published by The Prang Educational Company, 1879.

The most exhaustive modern book on the subject is *Modern Perspective*, by Professor William R. Ware, of Columbia College, published by Ticknor & Co., Boston.

There is an interesting book called *The Essentials of Perspective*, by L. W. Miller, principal of the School of Industrial Art of the Pennsylvania Museum, Philadelphia, in which the subject is treated in a familiar, conversational way, with attractive pictorial illustrations, published by Charles Scribner's Sons, New York, 1887.

A thoughtful contribution to the consideration of this subject will be found in *Free-Hand Drawing, Light and Shade*, and *Free-Hand Perspective*, by Anson K. Cross, Instructor in the Massachusetts Normal Art School, and in the School of Drawing and Painting, Museum of Fine Arts, Boston, published by the author, 1892.

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